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Overhaul tipped to save $20m

By David Hutchins

ADELAIDE — The SA government is to overhaul its present diverse communications systems, casting them into an integrated network which is expected to save it $A20 million within five years.

The two-stage remake of SA communications follows a strategy recommended after a seven-month study by consultants Logica. It calls for first building a government-wide voice network with a data network overlay. The second phase would develop this into an integrated voice/data network. Investment in the first stage of development is estimated at $A6 million, mainly for replacing PABXs.

For the voice network, Telecom backbone links will tie together the latest PABX equipment at Adelaide and seven regional nodes. The data network will build on existing State agency investments to create a government-wide packet-switching network.

Mobile radio networks with community access are part of the development strategy, implemented and managed by a new Government Communications Unit.

No hitches, no glitches, so it's DEC all the way

Exchange boosts spending on net

By Luis Huesch

SYDNEY — The Australian Stock Exchange (ASX) prepared to write off a $A7.5 million initial investment in its emerging automated trading system in case of a London-style "Big Bang".

But the ASX avoided problems by not putting all of its eggs into the same basket all at once: everything worked as planned and the ASX is going ahead with its all-DEC network expansion following successful live trials between Sydney and Melbourne.

Further custom Microvax-based network processors (NPs) costing $A250,000 each have just been ordered for Perth, Brisbane and Adelaide and will be installed and brought online early next year, according to ASX sources. The full network will have 14 NPs (see diagram on page 2).

The ASX is also seeking specialist staff in Perth, Brisbane and Adelaide to complement their numbers of two each in Sydney and Melbourne, plus two "help desk" staffers in the two capitals.

The decision so far is to go all-Digital with the Stock Exchange Automated Trading System (Seats), but ASX sources say there is a need for greater number-crunching capacity, and a Sierra-type machine might be called for. Observers said the networkers' prayers may be answered next year by a rumored quad-processor Vax and VMS enhancements that together are expected to make the machine "nudge IBM's 3090".

"If we go to 23-hour trading like the international exchanges, the time for 'overnight' processing is shrunk to one hour," the sources said.

However these sources say that user response times on the network — a wide-area Ethernet with Translan bridges linking the NPs — are in the sub-second range, an outstanding achievement in automated trading systems.

The Seats concept is based on priority trading (first bid at the best price gets served first) and the broadcast method of sending all sell/buy changes in the market to every terminal simultaneously from the exchange involved. Here, too, sub-second broadcast

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Bob Hawke gets a briefing on Australia's new standard telephone from Mel Ward in Geneva. Hazel and proud STC chief Bill Page-Hanify look on (story page 18). *Picture by Luis Huesch.*

Phone fraud scandal

MELBOURNE — Telecom investigators and Federal police are interviewing 56 Telecom staff in four States, and 193 customers, after a year-long investigation into international phone fraud that may have cost the carrier millions of dollars in lost revenue. Seventeen international phone operators were suspended at once.

The action follows massive sabotage of Telecom phone and data lines in tunnels in the Sydney central business district, where people believed to have had inside knowledge used axes and angle grinders to sever 24 cables containing up to 35,000 circuits in 10 separate places. Telecom has offered a $50,000 reward for information on the attack.

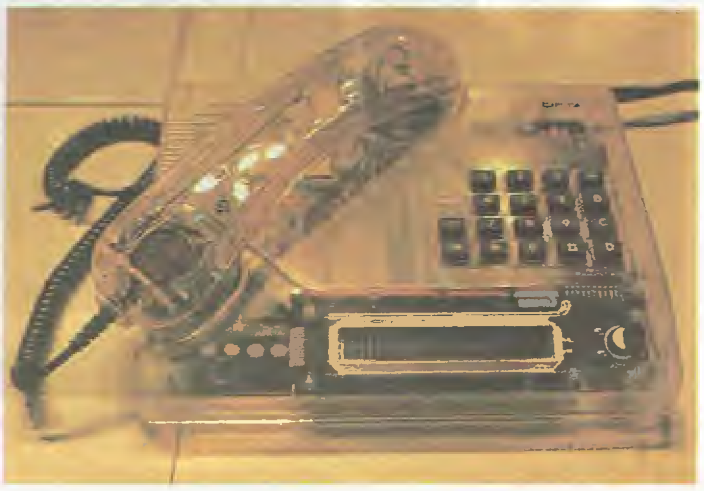
Search warrants in the alleged phone fraud case were served on operators on Tuesday, Nov 24, according to Telecom's director of corporate investigatory studies Peter Lester, and action would continue in four States over two weeks before briefs would be prepared for the Federal Director of Public Prosecutions in each State. This process could take several more weeks. Prosecutors will then decide whether charges will be laid, he said.

Lester said the investigations began 12 months ago after discrepancies were detected in call billing records kept by Telecom and tallies by the Overseas Telecommunications Commission (OTC) — which carried Australia's overseas voice and data traffic.

Initial evidence so far indicated that some operators may have placed international calls for customers without recording the charge to the customer's account. Other evidence allegedly showed that some operators did not debit customers' accounts for overseas calls, but accepted personal payment for illegal connections, Lester said.

Things to come . . .

THE shape of things to come — if Telecom's monopoly on the lucrative small business market is eventually cracked — this compact key system for two exchange lines and six extensions could be yours for $A1000, quantity one. Displayed at the Telecom '87 exhibition in Geneva, the Sirius 2006 from West German specialist DFG is shown here "in the raw" to highlight the circuitry packed into an otherwise normal handset. The micro-PABX uses an LCD operator panel and offers, beside basic key system features: differential call signalling, automatic recall on busy, call barring for up to four digits, class-of-service checking, secret conference mode, paging, programmable barge-in, do not disturb and operator break-in modes, speed dialling, call redirection, extension call-back and switchable music-on-hold, just to name some salient features. The key on the unit protects programming mode. DFG said it had received orders for 20,000 to 50,000 units each from European PTTs and our neighbor Singapore. Even the Japanese are negotiating to buy the Sirius. . . *Picture: Luis Huesch.*



INSIDE

Shaken world banks rally
New voice net links 21 "Feds" — page 6

ISDN captures PC card slots
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Net spending boosted

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performance is achieved, the sources said.

About half of the brokers in Sydney and Melbourne now use one or more PCs (200 in all) linked to the Seats system, which is so far handling 20 stocks. More stocks, up to 50, were to be added this month, but the October market crash is thought to have put something of a damper on directors' planning.

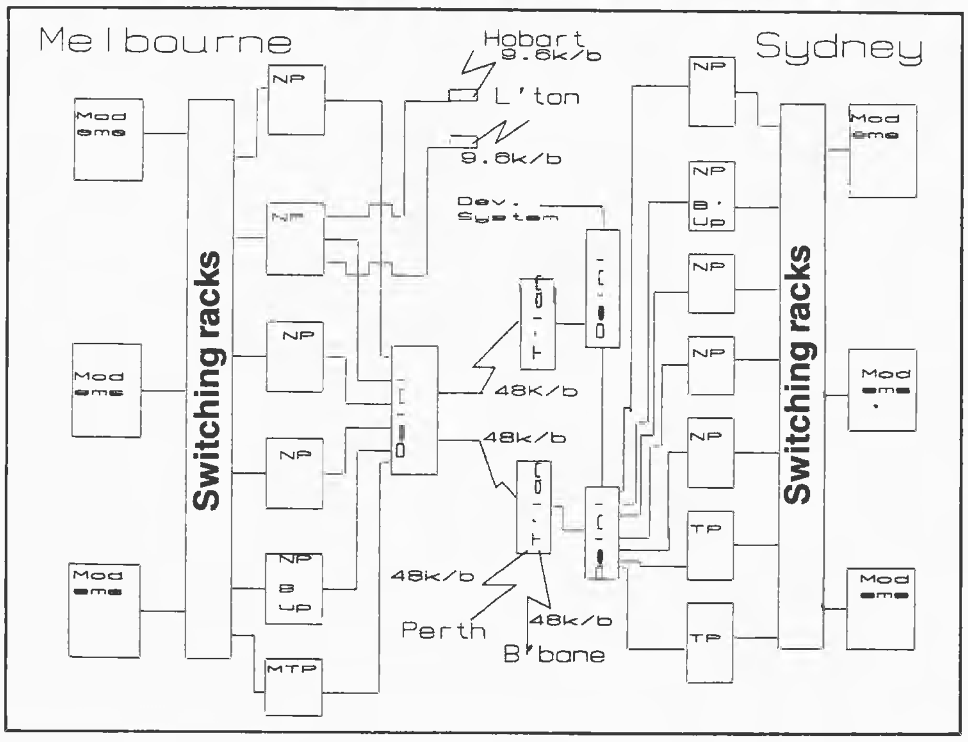
However, within 12-18 months all brokers and operators will be served by Seats with the entire gamut of 2500-plus stocks.

The terminals used are "very smart PCs with our own comms boards", according to the sources. Instead of checking for the presence of Request-to-send (RTS) and Data Terminal Ready (DTR) and other signals, as in an IBM Systems Network Architecture (SNA) environment, these boards merely check for Carrier Detect (CD). If the signal drops, the network polls the terminal for 10 seconds and then times it out. On the network processors, only Carrier Detect and Receive Data (RD) are checked, again increasing response performance. On an IBM system, the best response time would be three seconds, according to the ASX networkers, who have modelled Seats on the one used in Toronto, Canada.

In the existing Seats configuration, twin 48K-bit/sec channels leased from Telecom link Sydney and Melbourne to guard against link failure. The ASX has also required Telecom to use different media for the two Digital Data Service channels. If one link should fail, the network automatically switches over to the backup link.

As the system evolves, Megaband (2M-bit/sec) links may be needed, and ASX networkers would like to aggregate voice and data in such an option. Another possible development in consolidating Seats would be to aggregate all the brokers' individual leased lines for the Reuters stock market service on to a single link via Seats, which would then fan out the lines to the brokers. In the process, these would also be able to clear their desks of some terminals.

The system will eventually also encompass the exchange's Jecnet online enquiry system, served by a mix of Honeywell, Hewlett-Packard and Tandem processors. Overall spending plans for the consolidated operation are about $A60 million, according to ASX sources.



This simplified ASX network diagram has been edited to prevent security problems

Vistel PABX bargains

By Terry Watson

MELBOURNE — Purchases of new NEC PABXs for deployment in Victoria's Vistel government network could reach 50 as Vistel is "selling on" switches at discount prices to institutions such as hospitals. Eight PABXs have already been sold in this way.

Vistel signed a contract recently for some $A11 million worth of Neax switches, three of which will be installed in the Melbourne central business district hub of the network before Christmas.

The network will comprise a core of about 30 PABXs, with regional centres such as Geelong and Ballarat coming online during 1988. The network is expected to be completed by early 1989.

Vistel managing director Alan Horsley said network management software custom-written in Cobol by a local supplier could have export potential in Pacific rim nations. "The Victorian government's network is as big as those used by some small countries," he said.

Monopoly maps path for retreat

By Luis Huesch

MELBOURNE — Telecom is resigned to the establishment of an independent regulatory agency, the total surrender to market forces of the customer premises equipment (CPE) market including telex, and to open slather on the supply and maintenance of PABXs and small business systems, according to a document purported to sum up senior management thinking.

The document, now circulating among users, is entitled "Some unofficial Telecom views" and sets out a timetable for retreat from monopoly positions that are becoming untenable.

Furthest off would be the PABX and small business systems as well as other customer premises equipment markets, which Telecom reportedly expects to be fully deregulated by January 1, 1990 — including PABX maintenance. Meanwhile procedures would be developed during next year to register maintenance contractors, and 12 months transition be allowed "to accommodate "skills shifts", that is, to allow PABX vendors to absorb Telecom technicians.

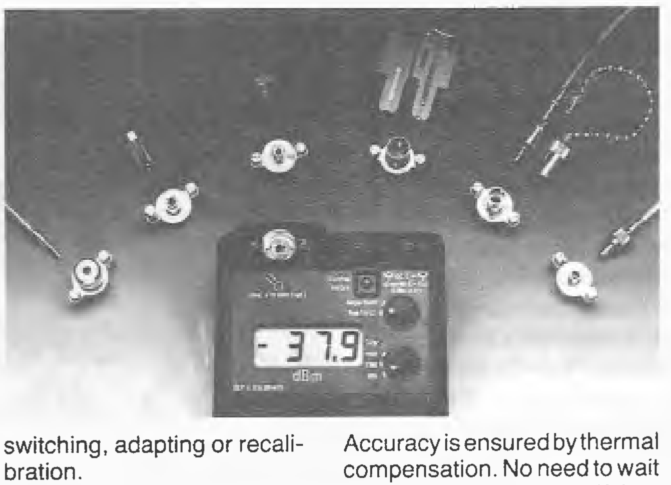
First cab off the rank in the alleged self-set liberalisation schedule — after facilities cabling: to be opened to competition from the end of this year — would be the market for telex machines and teletex (X.400 corporate electronic messaging at 2400 bit/sec).

Competition in both markets would begin on July 1, 1988. Observers said surrender on these positions is relatively painless because of the inroads made by facsimile and telex workalike systems in the telex market — now monopolised by Telecom with units sourced from French maker Sagem. Telecom also has been unable to date to market more than an insignificant number of the telex electronic messaging systems it sources from West German maker mpb.

A year from now, Telecom would abandon its position on having the sole right to instal a first telephone on user's premises — something the Trade Practices Commission considers is even now outside the powers (ultra vires) vested in Telecom. Instead, according to the purported Telecom timetable, third parties would be allowed to supply and maintain first phones that meet performance criteria set for Telecom phones.

Also by January 1, 1989, the market for second and additional handsets would be thrown open completely, subject only to certification of electrical safety and non-interference with network performance.

Another early lark on the horizon of liberalisation would be household wiring for all but the first phone connector: to be open to third-parties from July 1, 1989. Again, this sounds more generous than it is: Telecom has long given up resisting the flood of phone lines with the ubiquitous US-standard RJ11 modular connectors, adapters and Y-connectors available from Australian department stores and which make do-it-yourself wiring a cinch. Although not specifically excluded by the phrasing of the document, it is not likely that Telecom would give up voluntarily the right to string wires to the premises. Meanwhile the document proposes to slash the "free" cabling allowance from 300m to 30m.



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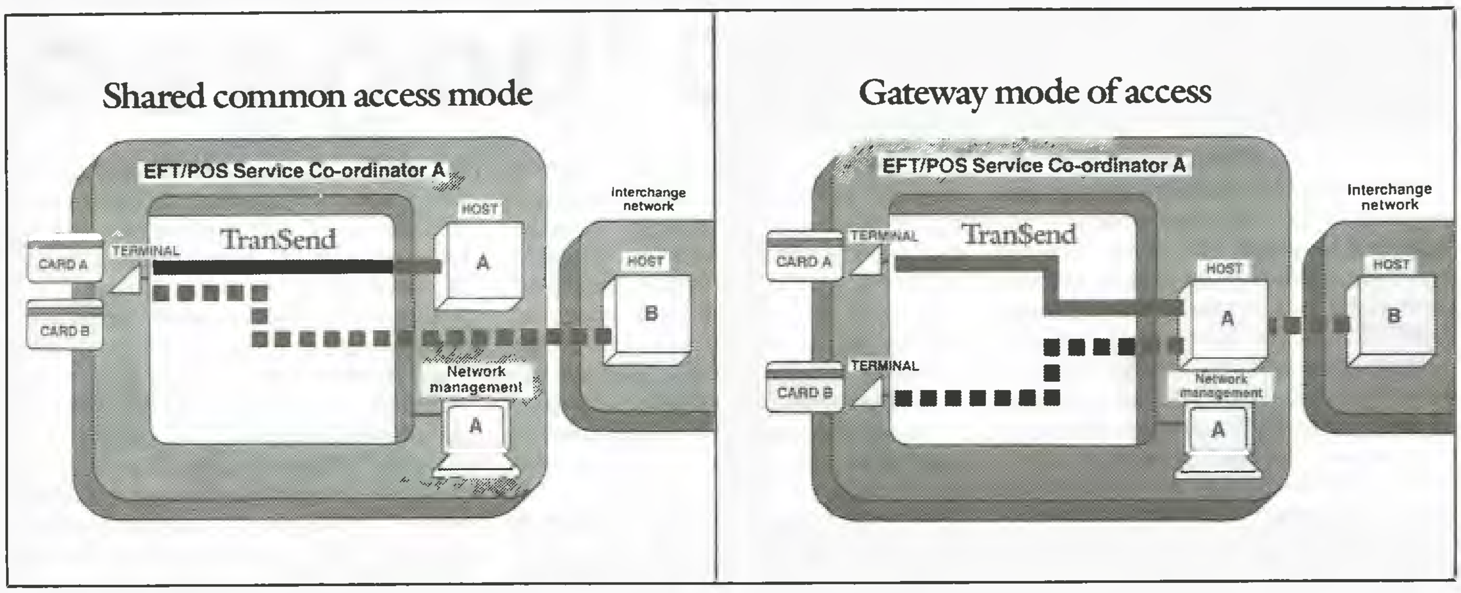
Three big banks eye Tran$end

MELBOURNE — Telecom is negotiating with three major banks who intend to follow the ANZ Bank and use the new Tran$end multi-mode, multiservice EFT/POS access service (*Communications World*, November).

Details were not disclosed but a Telecom spokesman said contracts were expected to be signed before Christmas.

Tran$end agreements are individually negotiated with the prospective customer, usually a financial institution or large retailer, depending on the network configuration. They are usually fixed for five years, and can entail either a flat usage charge of 1¢ per transaction or a charge based on the volume of transactions handled, ranging from 3¢ per transaction for up to 50 million down to 1¢ for more than 200 million transactions a year.

Tran$end, officially launched at the end of October, is at present used by the ANZ Bank's Electronic Network Services (ENS), which carries its own customers' EFT/POS transactions and also provides services for third parties, including travel agents grouped in the National Reservations System. It is a *card issuer*, financial data *acquirer* from connected terminals and *service co-ordinator* for its commercial clients, according to Telecom parlance.



In shared common access mode (left) transactions are routed directly to any of the various service providers, depending on the card used by the customers. In gateway mode (right) all transactions from the various card issuers' terminals are sent to a single frontend processor which then switches them to the relevant host

Both options

After some lengthy fence-sitting while banks and retailers debated the pros and cons of gateway access versus shared common access and several players launched their own EFT/POS networks, Telecom decided to offer both modes (see diagram) to Tran$end customers.

It has dismissed existing networks as "trial" installations and expects a "huge expansion" for the national system because of its adherence to OSI standards, improved signalling and error-correction protocols, multiple addressing, multi-point terminal connectivity, integrated network management and lower access cost. The fact that clients of Tran$end service providers can run multiple data services over one line is also seen as an inducement for EFT/POS customers to switch to the Telecom offering.

Customers are up for a $A400 once-only connection charge per terminal access point (Tap) in point-to-point connection to the network's Network Access Controller (a modified Honeywell DP6 minicomputer handling access to the Austpac packet-switching network) as well as for the first Tap in a leased analogue line connection with up to eight Taps each. Annual line rentals in both cases range between $A650 and $A875.

Network management by Telecom costs $A25/Tap/year for up to 1000 Taps, and $A100/Tap/year for anything above that number. If the customer institution wishes to manage the service itself, it will require a special Service Access Facility (Saf) for each 1000 Taps and must pay $A150,000 connection fee plus $A100,000/year rental. Each additional Saf terminal costs $A8000/year extra. Networks for fewer than 100 Taps must also pay for host connections at standard Austpac rates of $A7620/year for 9.6K-bit/sec access and $A16,800/year for 48K-bit/sec lines. In view of this cost structure, Telecom does not expect small networks to join up.

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Task force 'bogged down'

MELBOURNE — The government's task force on telecommunications policy is getting bogged down by "real world . . . political and industrial constraints" and will over-run its deadline by several months, the minister for communications, Senator Gareth Evans, has admitted to industry.

He poured cold water on the hopes of those expecting major regulatory reforms, referring pointedly to an outcome aimed at "improved services delivered more efficiently", which would be acceptable to the entire community. At the same time he appeared to put the underlying regulatory issues into the "In" basket of the World Administrative Telegraph and Telephone Conference (WATTC), to be held in Melbourne in December 1988.

Member nations would have to come to grips with a range of new key issues including the questions of whether private as well as public international networks should be regulated; whether regulation should apply only to governments and recognised carriers or to all international service providers; whether value-added services should be regulated; and whether Australia should obligate itself in an international treaty to provide a basic or universal service, he said.

Senator Evans' major policy statement on strategic and regulatory objectives, originally announced for the end of this year, will now not be made before February or even March 1988.

Addressing the annual conference of the Australian Information Industry Association (AIIA) in Melbourne, Senator Evans said there was wide support for a regulatory agency independent of Telecom and this deserved careful study. Similarly, "the need to ensure that whatever competition does take place (now) is fair on all sides is also evident", the minister said.

But he added that "the tension between the understandable wish for competition to stimulate efficiency and the need to preserve universal services at affordable prices . . . gives rise to a number of difficulties which still need to be worked through more thoroughly."

The minister recognised that "the conflict between the government's expectations of a commercial result from Telecom, and its requirement that Telecom deliver a whole range of community service obligations is overdue for resolution". He repeated earlier arguments that Telecom must be strengthened first and be given a chance to improve its efficiency before it would have to face "whatever competition may eventually arise".

He criticised people who were pushing the government to take "enormous risks to pursue benefits whose existence depends on accepting some mythical faith, and whose size is dubious".

Instead, "the government will only be considering options that are sensible and realistic, and that are achievable in the real world, with its political and industrial constraints."

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Atug 'log of claims' is radical

By Noel Bennett

SYDNEY — Recommendations by the Australian Telecommunications Users' Group to the Federal government's Task Force on telecommunications policy would result in a radically restructured industry.

The Atug submission brings together all the contentious issues which the group has voiced over the past few years, together with some that are seemingly new.

Presenting an overview at a recent Atug seminar, executive director Wally Rothwell noted that in some organisations, telecommunications costs were second to labor costs and, accordingly, users were pushing for more competition and wider choices while not neglecting "social contributions".

First in the Atug "log of claims" was that an independent regulator should be established, reporting directly to parliament as Telecom could not be "the rule maker, player and umpire". Then, policies should be set by the government to have Telecom's monopoly restricted to the public switched telephone network, throwing open large areas for competition. Any potential job losses could be offset by bringing optic fibre cable right to the subscribers' houses.

Atug also suggested that the Australian Telecommunications Employees Union be allowed extend its ambit into the equipment field, perhaps amalgamating with the Electrical Trades Union.

Value added services, an increasingly growing area, must also be left open to competition and Aussat must be allowed to operate in the long haul routes and even have its own land lines. Rothwell said that with liberalised access to the public network — even with some fee levied — users should have unrestricted permission to use it in both sending and receiving modes.

Private networks should be allowed both to carry third-party traffic and also sell network capacity.

On the ticklish question of cross subsidisation, Rothwell said this should be determined by the government, but it must be both visible and accountable

Telecom should divest itself of its 25 per cent holding in Aussat, consideration should be given to selling off OTC and, no director should sit on more than one carrier board.

Alcatel scores underwater link

By Luis Huesch

SYDNEY — Two subsidiaries of multinational telecommunications giant Alcatel NV have been selected as the main contractors for the $A160 million first stage of the Tasman 2 submarine optical fibre communications network that will link Australia to North America and Asia from the mid-nineties.

Submarcom, a French specialist in long-haul international submarine links since 1890, and Standard Telephones & Cables (STC) will construct the 2200km link to New Zealand for Australia's Overseas Telecommunications Commission (OTC) and Telecom New Zealand under a $A100 million contract expected to be signed this month.

The OTC will contribute half of the cost of the project, which communications minister Gareth Evans described as one of the "most exciting" to date in the government's push to expand Australia's telecommunications industry. Announcing the successful tender last month, he said the Federal government would "continue to lend every support to that (industry's) development and expansion, which is vital to Australia's future". Tasman 2, the forerunner of even bigger things to come, would provide 300 skilled jobs and lay the foundation of a new export industry.

Preferred contractor

Evans said the preferred contractor was chosen for offering least cost and highest local content: the Submarcom tender for the minimum configuration twin 560M-bit/sec fibre cable was seven per cent cheaper than the next lowest tender, and local content of 70 per cent compared with only 45 per cent for the nearest rival.

Tenders were also submitted by Britain's STC in a joint bid with AWA; AT&T of the US jointly with Olex Cables; and NEC with Ocean Cable Co/Sumitomo Electric of Japan.

To achieve the high local participation, Submarcom/STC are to set up a new company to carry out the contract — Tasman Cable Company, which will be 20 per cent owned by Alcatel STC Australia, and 40 per cent by other Alcatel subsidiaries. The remaining 40 per cent equity is to be offered to Australian and New Zealand interests. The NSW Government is taking up seven per cent of the shares in the new company, which STC chairman and managing director Bill Page-Hanify said is "destined to become one of the world's major supplier of submarine systems". TCC's exports are tipped to reach more than $A1000 million over the next decade, servicing a world steel wire, optical fibre and plant-building.

Extended capacity

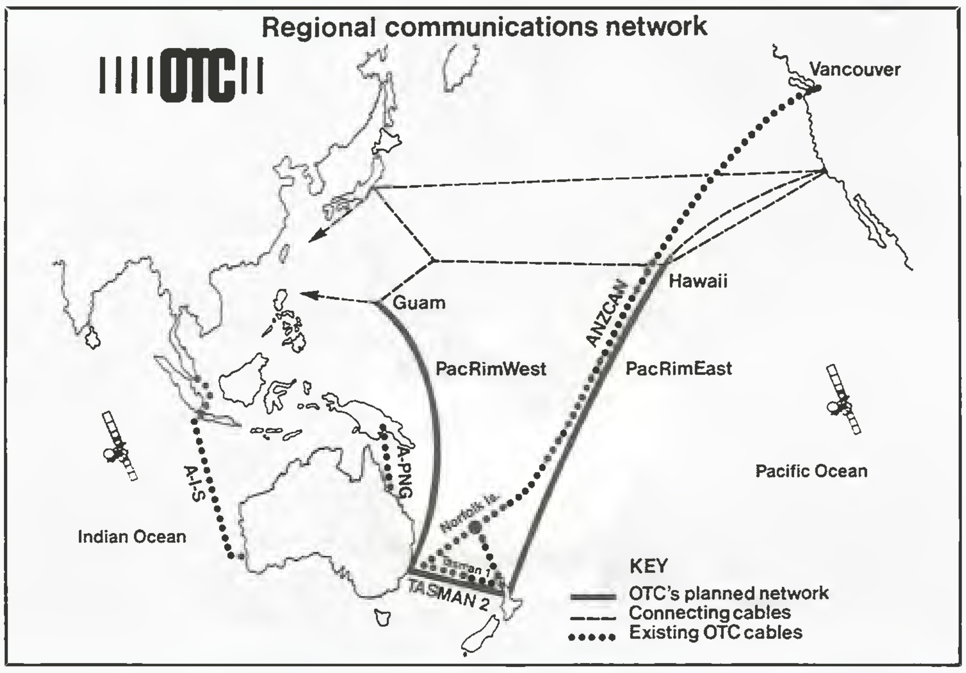
Construction of the link is to start next year, with completion scheduled for late 1991. The cable will contain a minimum of two but possibly three sets of optical fibre pairs, operating at 5600M-bit/sec and capable of carrying a total of more than 20,000 digital circuits that can handle up to 100,000 simultaneous voice communications.

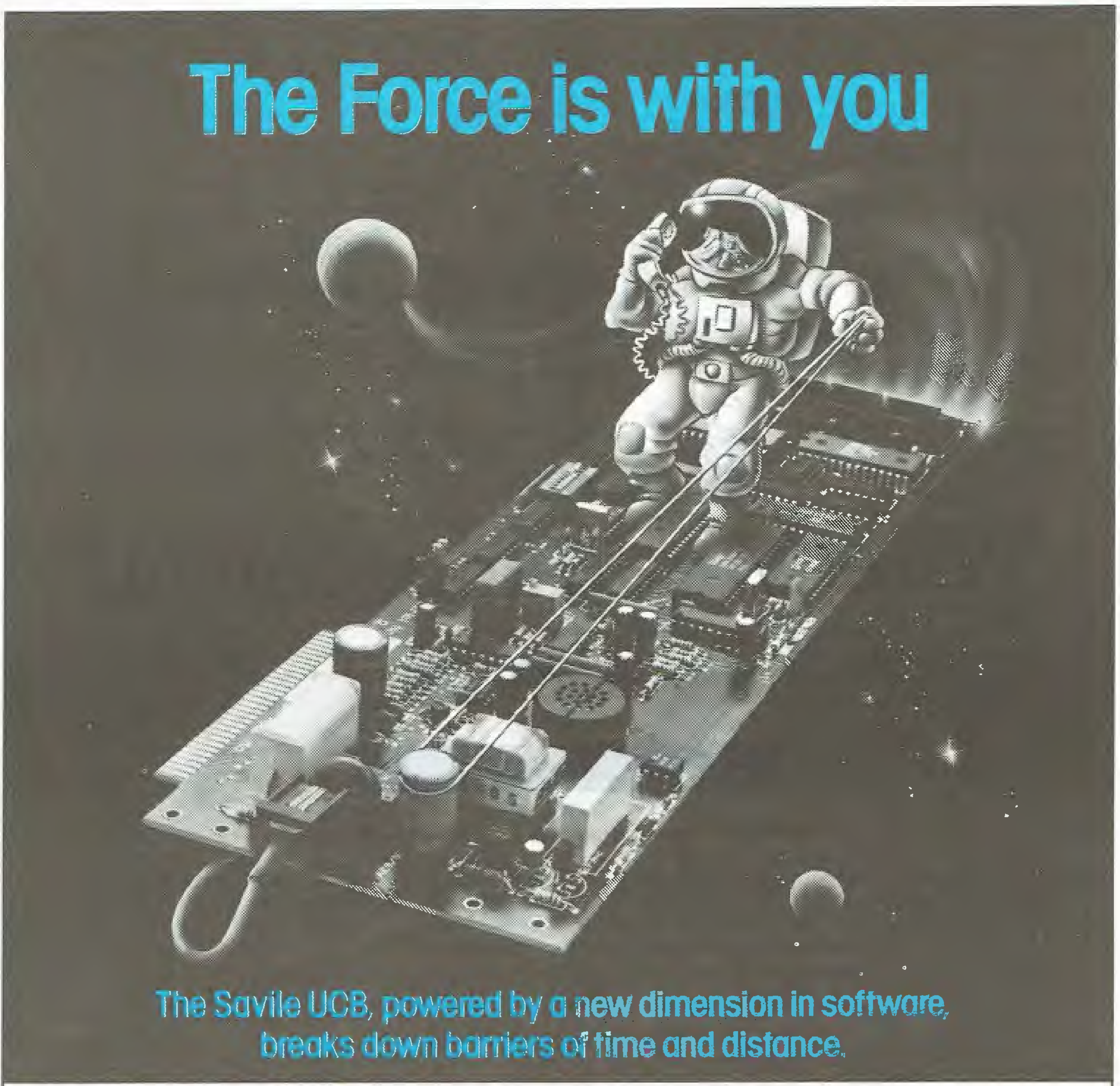
Tasman 2 thus dramatically extends the capacity of the rapidly filling Tasman 1 and Anzcan cable links, which have fewer than 2000 analogue circuits and can handle only 4000 simultaneous voice conversations.

The first optical fibre submarine link in the region, Tasman 2 is also first stage in a $A2000 million project masterminded by OTC to connect Australia with the US, beginning in 1993 and Asia, starting in 1995.

market for submarine O/F systems estimated to be worth $A4000 million in the early 1990s.

Cable will be supplied by a new $A50 million STC plant in Port Botany. Optical lasers and the 19 repeaters needed for Tasman 2 are to be manufactured at STC's Liverpool facilities, where almost half of the 353 repeaters for the Australia-Indonesia-Singapore (AIS) link were built last year. Cable station equipment will be built in Wellington, New Zealand. Local manufacturing will also benefit from multi-million dollar flow-on orders for polyethylene sheathing,

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SC 102

Telenorma's plasma touch screen used in the bank network

Global system to link up 21 banks

By Luis Huesch

GENEVA — The world's main central banks, still shaken by the recent dollar debacle, have cut over a fully automatic voice conferencing system that lets reserve bank policy makers reach their peers individually or together with a single keystroke to coordinate monetary intervention measures.

The global conferencing system linking 21 banks is based on a sophisticated tandem exchange in Frankfurt, West Germany, which acts as the hub for high-quality, nonfading voice communications among the participating banks. These are connected to the hub by leased lines.

(Tandem exchanges are special systems for switching through traffic by connecting lines which have different signalling or transmission methods. They can also implement special performance features. By connecting four-wire telephone lines rather than two-wire links as in normal exchanges, tandem switches allow signal amplification on long-distance connections. This achieves OdB fading on the line, essential for high-quality voice links.)

The system, set up by the Bosch subsidiary Telenorma — a West German maker of a wide variety of telephone and switching equipment ranked number two in PABXs after Siemens — was tested by representatives of most of the banks concerned for two days in October and cut over early in November. A Telenorma representative at Telecom'87 in Geneva said data links would be added to the voice conferencing system at a later stage.

Telenorma had won the prestige $A5.7 million tender from the Deutsche Bundesbank (West German federal reserve bank) against strong international competition. On the shortlist for the international tender, awarded after protracted evaluation of competitive systems, were companies such as British Telecom and Ericsson.

TELECOM 87

A Telenorma KV70 tandem switch in Frankfurt is linked to the company's TM4030 terminal exchanges in participating banks, most of which have opted for Telenorma's space division multiplexing (SDM) 4030 dealer system that can connect a variety of switchboards, and party line systems, mobile phones in addition to plasma touch screens, CRT touch screens and so on.

The company said a single keystroke is sufficient to convene a session between participating banks via special software that establishes both bilateral and conference calls between the parties involved. Key features of the system, which can also be used as a standard PABX even though its "extensions" are thousands of kilometres apart, were demonstrated at the recent Telecom'87 communications show and conference in Geneva.

In the new banking network, the following central banking institutions can talk to each other, selected groups of partners or the entire banking community involved: Banca d'Italia; Banco de Espana; Banco de Portugal; Bank for International Settlements in Basle, Switzerland; Bank of England; Bank of Greece; Bank of Japan; Banque de France; Banque Nationale de Belgique; Central Bank of Ireland; Danish National Bank; Deutsche Bundesbank; US Federal Reserve Bank; Dutch Central Bank; Norwegian Bank; Australian Bank; Swiss National Bank; Swedish Bank; Bank of Canada; Bank of Finland and the European Commission in Brussels.

Telenorma said it had won Japanese approval for setting up similar private networks in Japan, the first time any European vendor has been permitted to do so.

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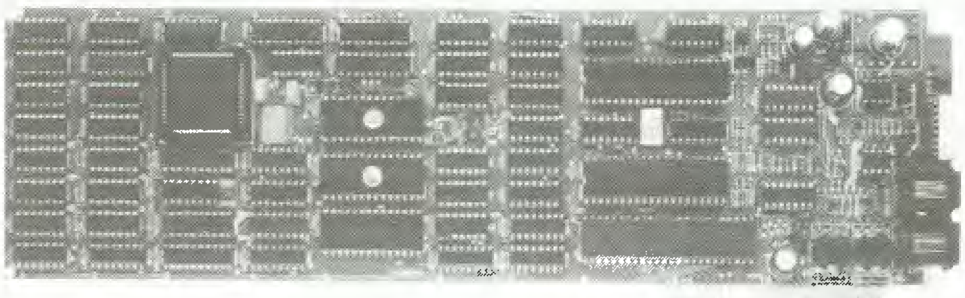
ISDN captures card slots

By Luis Huesch



The Hayes ISDN PC Card, a board-level terminal adapter for IBM PC and compatibles

GENEVA — Integrated Services Digital Network (ISDN) products and services captured much of the limelight of the Telecom '87 international show here last month — but perhaps the surest sign that ISDN has "arrived" is the launch of two ISDN terminal adapters as PC addon boards.

Although European PTTs are among those most active in large-scale ISDN implementation, both enduser products shown were from US vendors: Hayes Microcomputer Products and Infotron Systems Corporation.

Modem maker Hayes demonstrated its ISDN PC Card, linking a personal computer to European and American data services via a Northern Telecom DMS-100 digital switch.

The full-size card, displayed only as a "frozen in epoxy" sample of the "soon to be released" final product, is claimed to give the computer full access to the ISDN basic rate interface (2B+D), which will be the basic ISDN offering in a number of European countries from next year onward. This user interface provides for twin 64k-bit/sec channels and one 16k-bit/sec signalling channel, which can also be "appropriated" in part for user data. The card can also digitise the analogue input from any plain old pre-digital telephone.

TELECOM 87

According to the vendor, the ISDN PC Card can take full advantage of any line provisioning, allowing the user to choose combinations of B-channel voice, B-Channel and D-Channel packet mode data and B-Channel transparent circuit-switched data. It is claimed to handle ISDN D-Channel signalling for call setup as well as inband DTMF signalling for the subsequent sending of access codes and the like.

In addition, the card is said to support the CCITT X.25 packet-switching protocol for error correction, flow control and multiple simultaneous connections over packet-switching networks such as offered by most PTTs.

During the show a PC with the Hayes board was used to access the Swiss packet-switching network and the Austrian Datex-P (X.25) network for connection to electronic mail, telex and teletex services.

Support software used included the Hayes ISDN Bios, said to extend Netbios functions with telephone network functions, and the Hayes ISDN AT command set, a specialised superset of the vendor's intelligent modem commands. Hayes said it would publish its interface definitions so PC software developers could use the Hayes ISDN PC Card as "the standard entry into ISDN".

In conjunction with the Hayes card, Northern Telecom showed a memory-resident program that lets users control an NT Meridian ISDN telephone from a personal computer. The Call Manager Program can store up to 750 phone numbers and monitors and logs phone traffic.

While Hayes did not cite a commercial release date for its ISDN card, Infotron says it has already shipped 2000 of its Passport ISDN terminal adapters. However, the company only showed the standalone version of its ISDN product in Geneva and did not run any demonstrations on it.

Vice-president of international marketing, Bob Francis, said the product was available in both standalone and addon card versions. He stated that it was being used in 10 field trials involving six of the US Bell operating companies.

Francis said the Infotron card was being "hand-built" around an ISDN chipset from Siemens and would retail for $US1500-2000. He expected ISDN terminal adapter prices to fall over the next two years, down to about $US500.

As in the Hayes product, data can be transferred at up to 64k-bit/sec or be sent as X.25 packets via an inbuilt packet assembler/disassembler (Pad). the card also gives voice access to the host PC. It offers two data channels that can be either B or D. A Bell 212A-type modem-cum-PCM digitiser option permits interconnection to non-ISDN networks. X.25 protocol conversion is optional.

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SM8501	Modem 3+12® NCP	MD, PD, MA, OA, SW, ASY, IBM PC® Compatible	300 FDX, 1200/75 FDX, 75/1200 FDX (CCITT V.21, V.23, Bell 103)
SM8502	Modem 3+12® A	MD, PD, MA, OA, SW, ASY, Apple, II/e/c Compatible	300 FDX, 1200/75 FDX, 75/1200 FDX (CCITT V.21, V.23, Bell 103)
AM100	AutoModem® 21/23	AD, PD, TD, AA, AX, OA, AT, ASY	300 FDX, 1200/75 FDX, 75/1200 FDX (CCITT V.21, V.23, Bell 103)
AM120	AutoModem® 12/12	AD, PD, TD, AA, AX, OA, AT, ASY	1200 FDX (CCITT V.22, Bell 103, 212A)
AM140	AutoModem® 24/24	AD, PD, TD, AA, AX, OA, AT, ASY	1200 FDX, 2400 FDX, (CCITT V.22, V.22bis, Bell 103, 212A)
AM160	AutoModem® 123	AD, PD, TD, AA, AX, OA, AT, ASY	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 FDX (CCITT V.21, V.23, V.22, Bell 103, 212A)
AM180	AutoModem® 1234	AD, PD, TD, AA, AX, OA, AT, ASY	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 FDX, 2400 FDX (CCITT V.21, V.23, V.22, V.22bis, Bell 103, 212A)
SM8911	SmartModem® 21/23SA	AD, PD, TD, AR, AA, OA, AX, AT, ASY, SY, SW	300 FDX, 1200/75 FDX, 75/1200 FDX 1200 HDX (CCITT V.21, V.23, Bell 103)
SM8721	SmartModem® 1200SA	AD, PD, TD, AR, AA, AX, OA, AT, ASY, SY, SW	1200 FDX, (CCITT V.22, Bell 103, 212A)
SM8821	SmartModem® 2400SA	AD, PD, TD, AR, AA, AX, OA, AT, ASY, SY, SW	1200 FDX, 2400 FDX (CCITT V.22, V.22bis, Bell 103, 212A)
SM8421	SmartModem® 123SA	AD, PD, TD, AR, AA, AX, OA, AT, ASY, SY, SW	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 HDX, 1200 FDX (CCITT V.21, V.23, V.22, Bell 103, 212A)
SM8471	SmartModem® 1234SA	AD, PD, TD, AR, AA, AX, OA, AT, ASY, SY, SW	300 FDX, 1200/75 FDX, 75/1200 FDX 1200 HDX, 1200 FDX, 2400 FDX (CCITT V.21, V.23, V.22, V.22bis, Bell 103, 212A)
DL842	DataLock® 123SA	AD, PD, TD, AR, AA, AX, OA, AT, SW, EP, DE, PW, ASY, SY	300 FDX, 1200/75 FDX, 75/1200 FDX 1200 HDX, 1200 FDX (CCITT V.21, V.23, V.22, Bell 103, 212A)
DL847	DataLock® 1234SA	AD, PD, TD, AR, AA, AX, OA, AT, SW, EP, DE, PW, ASY, SY	300 FDX, 1200/75 FDX, 75/1200 FDX 1200 HDX, 1200 FDX, 2400 FDX (CCITT V.21, V.23, V.22, V.22bis, Bell 103, 212A)
IN600	PC In/Modem®	AD, PD, TD, AR, AA, AX, OA, AT, SW, ASY, FI (Half Card Size)	300 FDX, 1200/75 FDX, 75/1200 FDX CCITT V.21, V.23, Bell 103
IN610	1200 In/Modem®	AD, PD, TD, AR, AA, AX, OA, AT, SW, ASY, FI (¾ Card Size)	1200 FDX (CCITT V.22, Bell 103, 212A)
IN615	2400 In/Modem®	AD, PD, TD, AR, AA, AX, OA, AT, SW, ASY, FI (¾ Card Size)	1200 FDX, 2400 FDX (CCITT V.22, V.22bis, Bell 103, 212A)
IN620	123 In/Modem®	AD, PD, TD, AR, AA, AX, OA, AT, SW, ASY, FI (¾ Card Size)	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 FDX (CCITT V.21, V.23, V.22, Bell 103, 212A)
IN625	1234 In/Modem®	AD, PD, TD, AR, AA, AX, OA, AT, SW, ASY, FI (¾ Card Size)	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 FDX, 2400 FDX (CCITT V.21, V.23, V.22, V.22bis, Bell 103, 212A)
TR100	TrailBlazer®	18,000 bps High Speed Modem, AD, PD, TD, AR, AA, AX, OA, AT, EP, ASY	300 FDX, 1200 FDX, 2400 FDX, 18,000 Adaptive Duplex (CCITT V.22, V.22bis, Bell 103, 212A)
TR200	TrailBlazer PC®	18,000 bps High Speed Modem, AD, PD, TD, AR, AA, AX, OA, AT, EP, ASY, SW, FI	300 FDX, 1200 FDX, 2400 FDX, 18,000 Adaptive Duplex (CCITT V.22, V.22bis, Bell 103, 212A)
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SW – Software Included
EP – Error Protection
DE – Data Encryption
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EDITORIAL

Reeling with information overload

UNACCUSTOMED as I am . . . large international shows may not have the same effect on everyone but exposure to a week of what UN secretary-general Javier Perez de Cuellar called an "awe-inspiring" exhibition, Telecom'87, initially left me reeling with information overload.

A month after visiting the weeklong international telecommunications show and conference in Geneva, the impressions are gradually falling into place — and the resulting picture is one of the global village being wired for a Son et Lumiere *spectacle unprecedented in its novelty, diversity, and scope.*

It is built on the Integrated Services Digital Network (ISDN), with broadband digital services extending right into the home, information and processing being based on open architectures, linked via global access standards which make networks all over the world accessible on demand for voice, data or image exchanges.

But beneath the technological glitter, like malnutrition in the midst of plenty, lay the world's telecommunications drought areas, where access to the "universal basic service" meant a trek of hours or days to the nearest telephone. Saudi Arabia's Telecommunications Minister Dr Kayal reminded delegates that without modern communications systems third-world countries remain isolated and vulnerable.

Individuals of the third world "must come to grips with the idea that the telephone is no longer a luxury item", said Dr Kayal.

US deregulator Judge Harold Greene agreed, but spoke rather scathingly I thought of India's reported plans to import millions of dollars worth of mobile telephones. He rightly criticised a nation with limited development funds for spending these on "sophisticated telecommunications apparatus that might be of some benefit to a small group or class . . ."

But unlike Greene, let me second-guess Indian officials on the right way to deal with their vast country's needs: perhaps mobile telephones are truly "appropriate technology" on the subcontinent, rather than mega-port digital network exchanges and hundreds of thousands of kilometres of metallic or even fibre telephone lines.

Served perhaps by satellite overlay and economically priced — mobile phones are a booming manufacturing success: witness the recent alliances among European conglomerates — cellular radio telephones would be a splendid introduction for such third-world nations to the universal basic service.

Still on basic service, and still in the lateral thinking department: it has been reported that Telecom is losing $500 million a year through vandalised public telephones. Credit card phones may somewhat reduce the ravages, at least as far as they are motivated by greed, as may armoring phones in smooth stainless steel. But let me suggest that Telecom might come out ahead, both in cash and in credit, if switched to FREEFONES for local calls, as our poor northern neighbor Malaysia has afforded its gentry, at KL airport.

— Luis Huesch

LETTERS

Confusion 'hurts PABX market'

From: Ben Braeuer, Product Manager — PABX, Siemens Ltd

IN recent months a glut of uninformed statements have flooded the Australian PABX scene. Claims abound of "ISDN compatibility of third generation PABX", "Overnight compliance with Telecom's ISDN PABX Signalling Specification", and "false statements about certain PABX types being discontinued". In fact, most seem to originate from one particular large international manufacturer.

Placing doubts in a customer's mind about the opposition's products is a valid sales tool. However, to create confusion with statements which are in instances patently untrue, serves only to confuse the customer. Under the current depressed economic outlook our crowded PABX market does not need a decline in sales arising from purchase deferments by confused customers.

Siemens particularly take issue with statements that our System 601 PABX has been supplanted by our ISDN product Hicom. Nothing could be further from the truth. System 601 will co-exist with Hicom well into the next decade as both address a different market need. In fact, Siemens is delighted with the excellent market acceptance of System 601's cost-effective business solutions.

In 1988 customers will not only see an expanded range of System 601 features, but they will have the choice of ISDN with Hicom as well. We sincerely thank our customers for their support in 1987 and wish them the compliments of the season.

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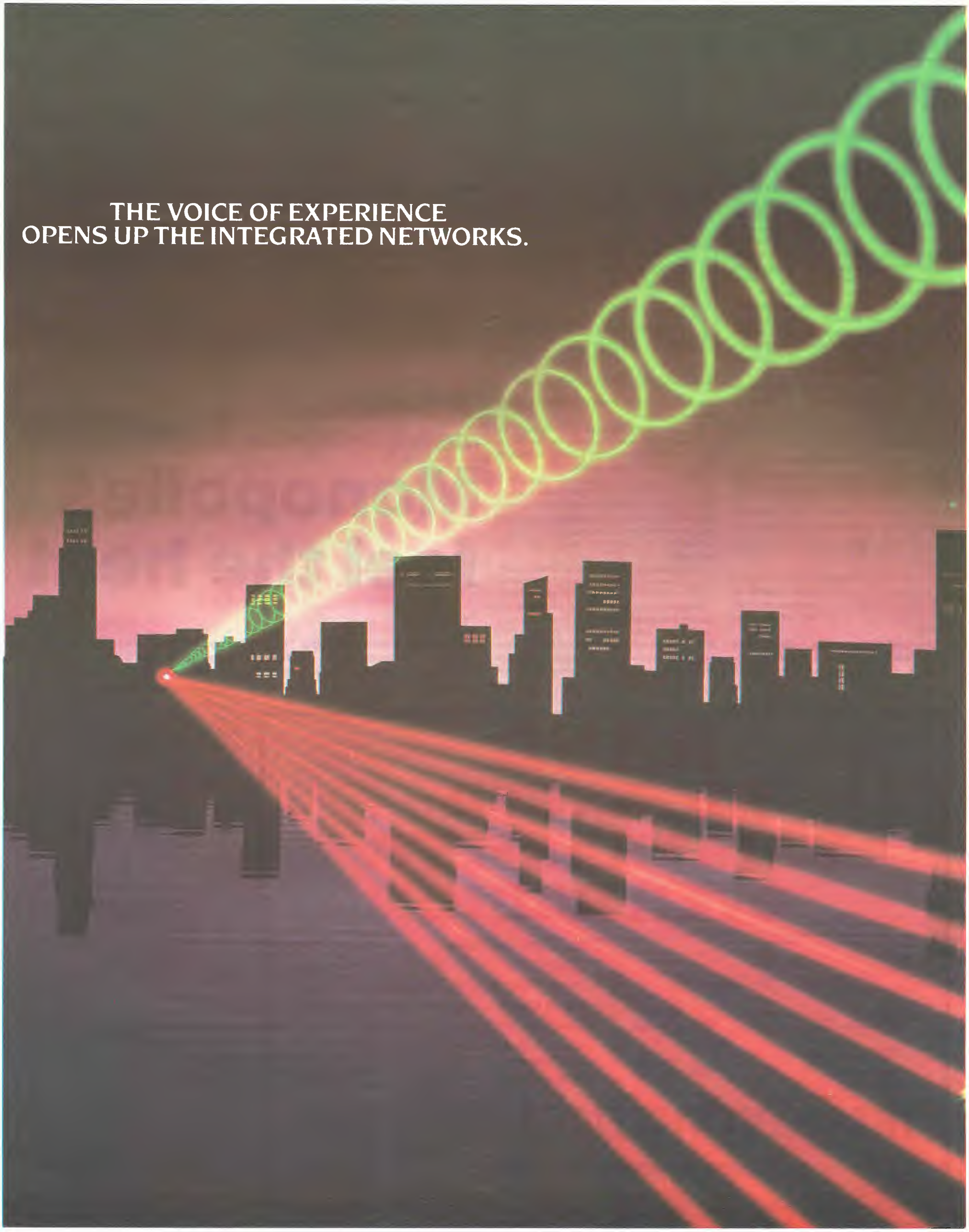
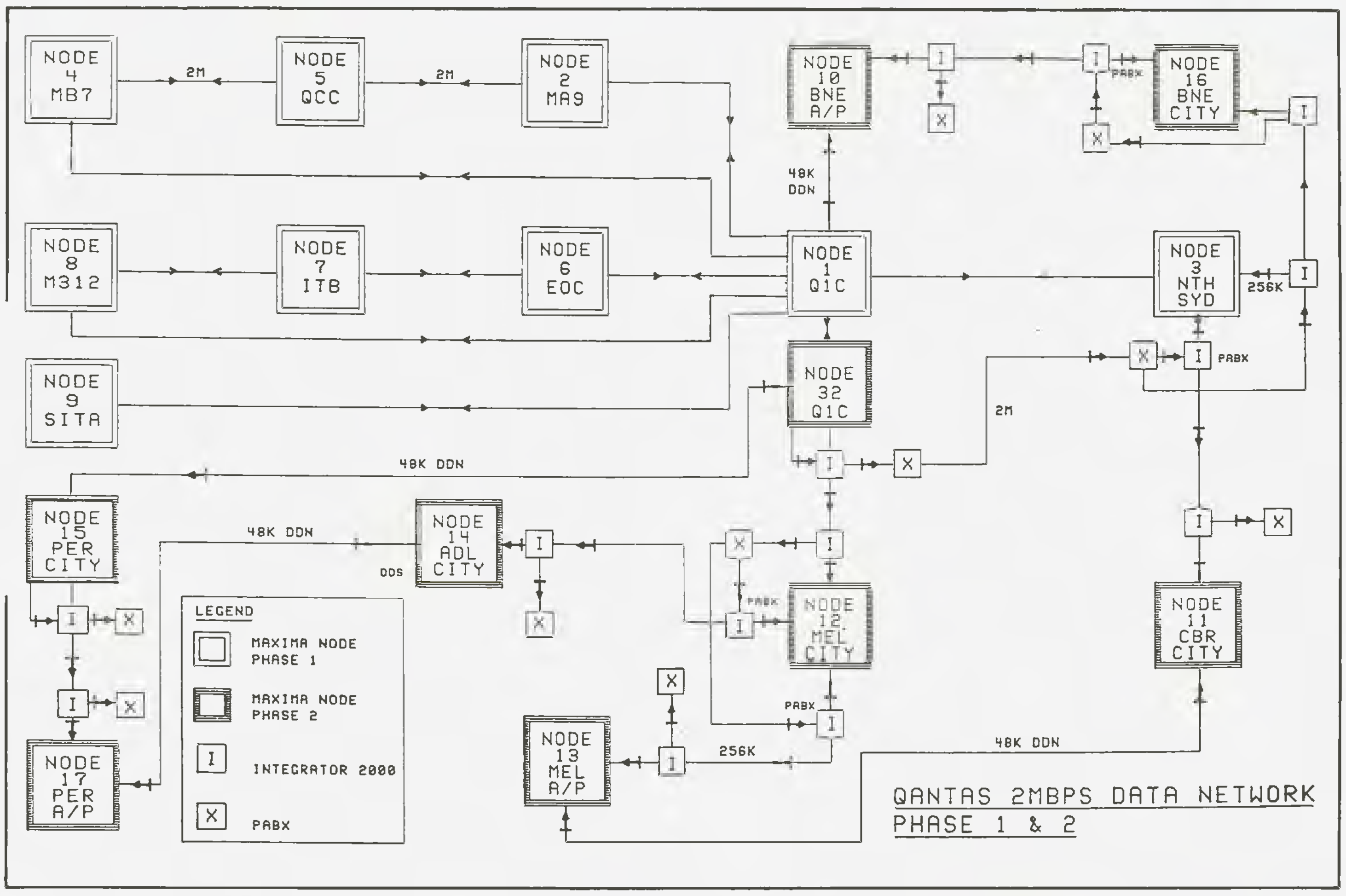

THE VOICE OF EXPERIENCE
OPENS UP THE INTEGRATED NETWORKS.

Data-voice integration takes off at Qantas

By a special correspondent



SYDNEY — Qantas has begun implementing its communications strategy, designed to integrate all voice and data communications and provide capacity for future growth, by installing a Maxima Integrated Network and communications resource manager.

In a program designed to bring forward promised ISDN benefits, the airline is installing 19 Maxima nodes from Scitec Communications Systems to integrate all voice and data traffic throughout Australia.

Previously Qantas had duplicate networks, one for data and another linking 10 third-generation PABXs to handle voice traffic. Studies showed that by integrating the two networks, substantial savings on communication costs could be achieved.

In early 1985 the Qantas Communications Services department began investigating ways to integrate.

Vital issues

According to communications services manager John Kearney, cost management, network control, performance and capacity were all vital issues in selection of the Maxima solution. Qantas had been very happy with other equipment from Scitec and, with Maxima being Australian-designed, Qantas could have input on product direction.

The new Maxima network will be used by engineering, catering and airport facilities as well as the all-important customer reservation service upon which the airline relies heavily.

More than 2000 terminals, or 4000 to 5000 users, will gain unseen benefits from Maxima. Already the system is capably handling between 3000 and 6000 transactions a minute.

By combining Maxima with Scitec's Integrator 2000, spare capacity on the Megaband trunkis linking the PABXs is used by Maxima for the data traffic.

Where required, additional capacity is provided by Telecom's Digital Data Service, creating an integrated backbone network which gives Qantas more efficient use of staff and transmission processing than a system consisting of separate voice and data networks.

It also provides a variety of self-healing features to ensure connections are maintained in the event of trunk or hardware failure.

Maxima's modular design will allow the system to expand as required to meet Qantas' needs for many years to come. With Maxima's distributed architecture, processing power expands automatically as the network grows, maintaining throughput speed.

'Private solutions will dominate the marketplace in the next five years'

Monopolies feel the heat

By Luis Huesch

PRIVATE networks are booming. They are big business for business, both equipment vendors and corporate users. Traditional monopoly carriers are feeling the heat from private network installation, which reached growth rates of up to 35 per cent in Europe.

In Australia their number and scope is increasing so much that Telecom in its recent annual report pleaded with the Minister for Communications, Gareth Evans, to bear in mind — with all the talk about deregulation — that private networks are having "an increasing impact on the public network revenues which traditionally underwrite the cross subsidy needed to sustain Telecom's nationwide community service obligations". (The cross-subsidy argument always sounds a bit hollow, coming for an organisation that owes the Federal government alone some $A4400 million and would need to hand over all of its operating profit for 10 years just to pay back the principal.)

The monopoly's anxiety — which is shared by a number of PTTs worldwide and is partly responsible for efforts to recapture the initiative through the introduction of the Integrated Services Digital Network (ISDN) — is being underscored by a bevy of recent alliances between computer and switch makers. They include several announced at Telecom '87, such as one between IBM and Siemens to look at international joint network ventures "in response to the demand for such services". Both Siemens and IBM announced similar agreements with Bell Atlantic International, whose research partner Bell Communications Research (Bellcore) has developed an intelligent network architecture suitable for setting up "virtual private networks".

(Continued page 12)

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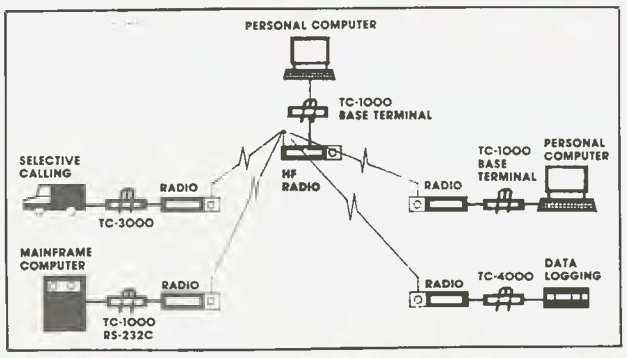

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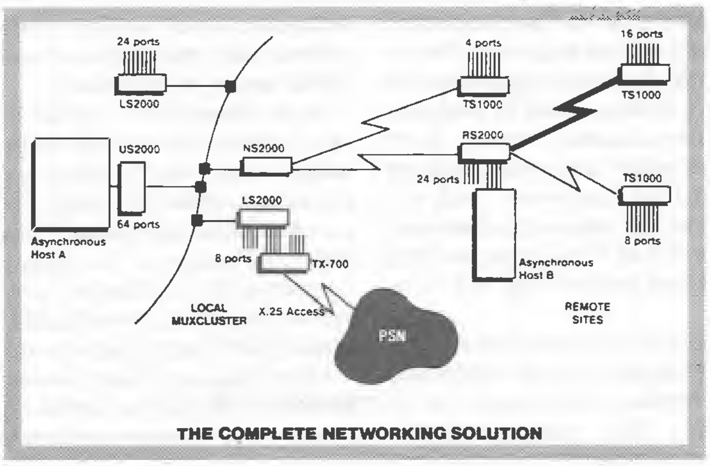

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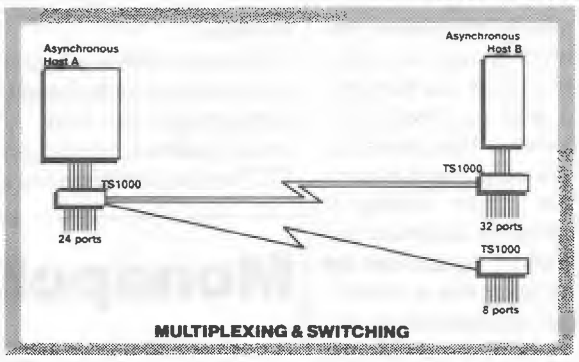
And ComDesign mux's can be configured to act as a bridge linking both wide and local area networks into a single corporate network where resources anywhere on the network are available to everyone.

TRANSPARENCY WHEN IT REALLY MATTERS

Most statistical multiplexers are transparent under light traffic conditions but become highly visible when the work load increases. As the network becomes busier, response times stretch and efficiency is reduced.

With ComDesign mux's, not single, but multiple processors ensure that fast response times are maintained irrespective of the network traffic volume.

These high performance mux's transfer data without interpretation and remain totally transparent long after other mux's have had their shortcomings exposed.



MULTIPLEXING & SWITCHING

MULTIPLEXERS THAT GROW WITH YOU

Because all ComDesign multiplexers are compatible with one another, changes in your network are easy to accommodate and implement.

The four channel statistical mux that meets today's needs for a single point to point link can grow with you to support thirty-two channels and provide switching when it is needed.

The same mux can become an integral part of a multi-node network providing load balancing and other management functions to help you optimise your network and preserve your hardware investment.

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Self healing is a ComDesign feature which keeps your network on the air and makes life easier for the network manager.

Multiple paths between sites can be established by using the four high speed composite links available on ComDesign networking multiplexers.

Built-in routing capability selects the shortest available path to a resource, and should a path fail, traffic is automatically re-routed by the multiplexer over an alternate path.

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ETHERNET IS A XEROX TRADE MARK

Intug backs user needs

THE International Telecommunications User Group (Intug), of which Atug is a member, is a multinational lobby for telecommunications liberalisation and a watchdog against monopoly abuses. It is itself represented in the CCITT and holds user conferences of its own. Intug chairman George McKendrick gave strong backing to private networks in a paper to Telecom'87 entitled "who should reap the benefits" of new technologies. The following is an extract of his paper, concentrating here on "the importance to users of their private networks". Copies of the entire address are available from the Australian Telecommunications User Group.

Information technology has brought many new tools which businesses have been quick to exploit, changing their methods and organisations to maximise the benefits. Telecommunications is the principal means of utilising computer systems at a distance and it has thus become inextricably involved in all the varied patterns created by different market segments. The result is that networks are designed according to the different emphases given to response time, level of service, security, or protocol. In fact businesses now deliberately differentiate in these ways to give them a competitive edge.

It is commonly known in business that international banks and airlines regard telecommunications and their core businesses as inseparable. The joint International Telecommunications Union/Intug Usercom Conference earlier this year heard similar messages from oil companies, motor manufacturers, newspaper publishers, office equipment suppliers and industrial conglomerates. I do not believe that this message is yet well understood by administrations and governments. They might find food for thought in a paper given in France by two university lecturers suggesting that a corporation's strategy could be deduced from its telecommunication network. Such companies now regard telecommunications as integral to their businesses, and see private networks and value-added services as critical parts of their infrastructures which directly affect their productivity and competitivity.

They therefore take the view that the provision of such services to their satisfaction is of greater fundamental importance to their countries than maximising the revenues of the administrations or protecting the indigenous telecommunication industry. On the contrary they believe both will benefit from resultant increases in the volume of usage and there is evidence of this in countries where regulation is more liberal.

Sadly, in most countries regulation prevents the optimisation of private networks. There are restrictions on their use between different companies and on interlinking them with public networks. The leased circuits of which they are comprised are unnecessarily expensive. Their viability is threatened by artifical tariffs designed just for this purpose. Terminal equipment for switching and control purposes is restricted by local purchase regulations or unreasonable homologation requirements. And, looking to the future, private networks may be threatened by the anxiety of administrations to justify new systems like ISDN.

The basic ISDN concept of voice and data travelling in digital form over common bearer circuits is sound, and many private networks already operate on this principle, but their operators do not wish to be constrained by 2B + D channel construction nor by the rules which govern public services. They wish to lease bandwidth of known characteristics to be utilised in the way best suited to their requirements, with the possibility to terminate it on private equipment which needs to conform to only normal safety standards and not with other public service requirements.

As an alternative to private networks or as an addition for specific purposes, companies may wish to utilise value-added products supplied by others. These in turn are often highly specialised because of the individual nature of the business sectors they serve. Standardisation, which evolved to meet the needs of worldwide telephone service, is not appropriate to such services.

Users have seen them develop quickest and best in the non-regulated, competitive, computer environment and are unwilling to see them put into the strait-jacket which currently regulates telephone services. The Preparatory Committee to the World Administrative Telegraph and Telephone Conference (PC/WATTC) (to be held in Melbourne next year) has produced new draft regulations which propose to cover all services.

Users see this as counter-productive and will resist any such change. If PTTs insist on competing in this field — and many users have doubts of the wisdom of this given the PTT's poor performance on videotex and on public data networks — there must be safeguards against cross-subsidy. There is no fundamental right for PTT monopolies to control such services, and when they attempt to do so user interests must challenge them.

Users see the ready availability of a wide selection of value added network services as fundamental to their ability to apply new technology to their businesses.

They also see the optimisation of private networks as a most important contribution to the effectiveness and viability of their businesses. They want to lease private circuits of good quality, narrow and broad band, digital and analogue, provided without long lead times, and subsequently well maintained.

They wish to connect to these circuits a wide variety of equipment of their own choice without long and frustrating homologation procedures and without restriction on the country of manufacture. They are willing to pay a fair price (preferably cost-related) for such facilities. They believe that volume tariffs militate against the optimisation of private networks.

Volume tariffs are not logical for something which is not affected by use, and in the leased-circuit context they are harmful because they threaten a whole industry which has grown up to maximise use of a common utility — I refer to multiplexers, modems and packet-switching.

Business users see no reason for the common restrictions on interconnection between private and public networks. It would be a great aid to efficiency if a customer calling from the public network could be extended over the private network to another factory or distribution centre if appropriate to save time and frustration. Extending calls from a private network to an employee on business elsewhere would facilitate matters and cannot possibly be harmful to anyone.

Monopolies feeling the heat

(Continued from page 10)

According to the venture partners, international customers regard such networks as "a key telecommunications solution for the future". In addition, private virtual networks would return some measure of control to the PTT concerned, considering that they would make use of public phone lines functioning as if they were dedicated private lines.

According to a recent Yankee Group research report, regulatory and technical changes in public network services and a trend toward value-added services will cause businesses to consider more carefully if they can justify extensive voice/data networks based on leased lines. "Any network component must now be considered, not only in terms of its performance in relation to the private network environment, but also in relation to a public and value-added service environment," the Yankee Group argues.

However, it forecasts that for the next five years or so "private network solutions (will) dominate the marketplace, as public network-based functionality proves expensive and too technologically immature".

Pent-up demand for companywide, interoperable solutions at present is driving communications managers to implement stopgap solutions but "they are eagerly anticipating a time when vendors provide a full range of network alternatives".

And once the trade-offs between setting up private or public networks become clearer, interoperability is readily possible and integrated net management is available, then "a veritable flood of network equipment purchases will ensue," said the Yankee Group.

Voice communications are an integral part of corporate networking, and here too the options are widening: DEC has just introduced its Computer-Integrated Telephony architecture.

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Connectivity becoming the key

Integration of voice, image and data only part of the scenario

By Gary Fahey

THE opportunity for corporations to utilise telecommunications technology to enhance their business development has never been so great as it is today. Never before has business success depended so much on the ability to exchange information quickly, accurately and reliably within a corporation and with customers whether it be locally, nationally or internationally. The move by corporations into the world marketplace to increase market share has greatly enhanced the requirement for a comprehensive communications network.

Information and access to systems must be as readily available to a user in Sydney as it is to a user in Perth, London or New York. This reliance on telecommunications has generated the need for sophisticated integrated private networks.

An integrated private network provides the corporate user with efficiencies and control which are not normally available from a common carrier.

Efficiencies are provided by way of dynamic bandwidth allocation, the utilisation of voice compression techniques and the use of proprietary protocols for inter-nodal communications to obtain maximum bandwidth utilisation which in turn leads to reduced leased line costs.

> *‘Security, control and flexibility will be of paramount importance . . .’*

The integrated private network allows the user to interconnect his total voice, data and image facilities. The data links to each private node may be a combination of terrestrial, satellite and radio, common carrier or privately provided. Utilising multiple data links from alternate suppliers ensures a continuity of communications in the event of failure of a carriers service.

The network management system provides control of access and security, performance and statistics, configuration and fault isolation. These networks may vary in size from simple 2-node point-to-point systems to large multi-node international networks.

For example, at Timeplex, we have installed networks in excess of 150 nodes and networks encompassing international locations with the private network node integrating the different transmission standards that exist around the world.

The integration of voice, image and data within a private network is just part of the scenario for the future of corporate networks in an era of rapidly evolving technology.

The scope of the emerging corporate network has no geographical bounds. The private network node has become the point of integration for voice, image and data, local and wide area networks, public, private and international.

Hybrid networking, integration of public and private networks by the private network node will give the private network user access to emerging public networking facilities such as ISDN.

Connectivity becomes the key to the corporate network. The network user will have the ability to connect to facilities within his own network plus access to public networks.

As an organisation's communications network increasingly becomes a major strategic resource and a key to gaining a competitive edge, network availability becomes crucial. Inability to deliver critical information in a timely manner can literally cost millions.

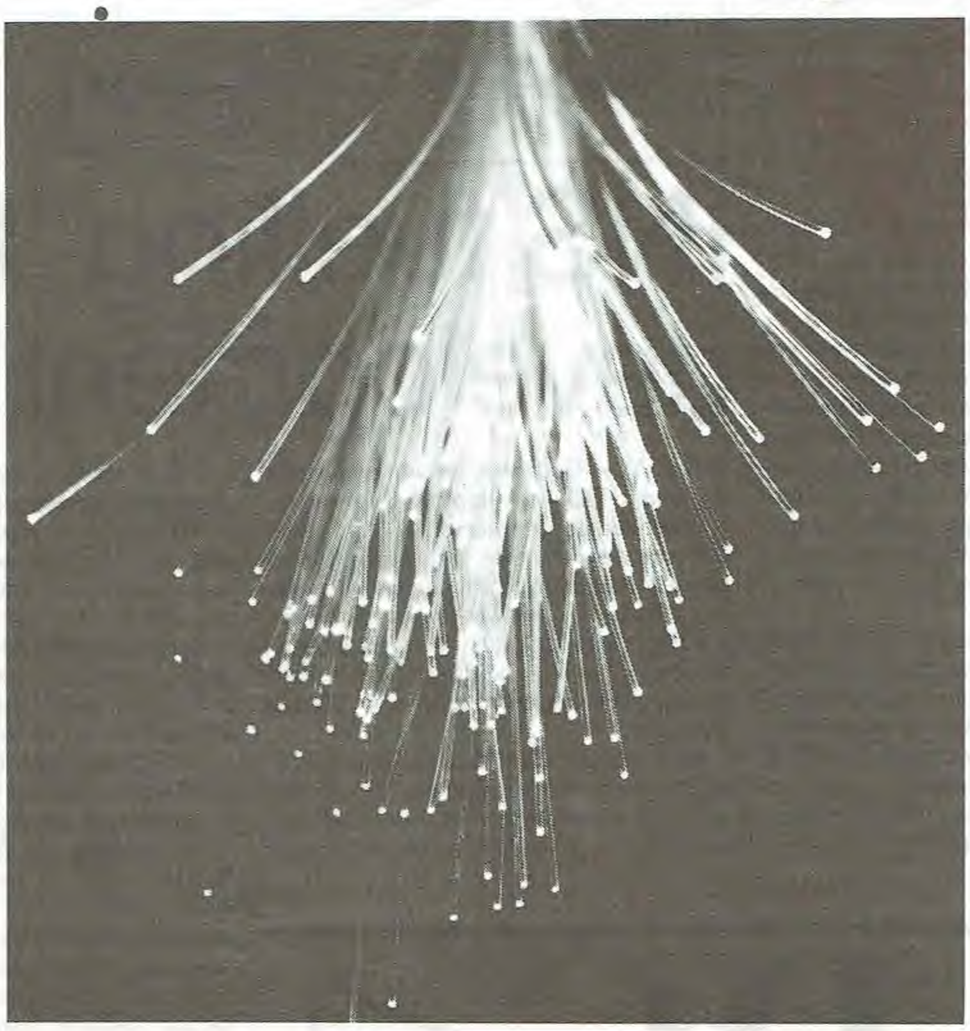
Full function network management is vital to efficient and reliable operation for today's multi-node and multi-vendor networks.

Traditionally network management system has been vendor dependent, resulting in multiple management systems to provide management of many different types of hardware which may be incorporated into the one network. The emerging network management systems will allow the corporate communications manager to control all multi-vendor equipment by the one network management system. These network management systems will also provide compatability with host based network management systems.

Private networks will continue to be of strategic importance to large corporations. The overriding corporate need is to establish a competitive edge in his own business. As that competitive edge and development of market opportunities today so often relies on the transfer of information, the private network, providing security, control and flexibility, will be of paramount importance. This importance will be reflected by the emphasis corporate management will place on the provisioning and management of these networks.

- *Gary Fahey is general manager of Timeplex (Australia).*

Some future facts for industry



OTC has announced the construction of the first stage of the world's most advanced optical fibre cable network.

Costing in excess of $1 billion, the cable network will be constructed in three stages. To link Australia. New Zealand. North America. And Asia by the mid 1990s.

The first stage, TASMAN 2, will be built here in Australia by the Tasman Cable Company.

Providing up to 50 times the capacity of conventional analogue cables, the new cable will carry more than 100,000 telephone calls. Simultaneously.

Or a mix of television. High speed data. Voice. Text and computer information – at speeds approaching that of light.

Essential for the future development of Australia's international links, the Pacific cable project is equally essential to Australia, as a nation. Developing new skills.

Through OTC, Australians and Australian companies have been assured of participation in the project through:

★ The transfer of technology to Australian personnel, with direct employment for 300.
★ The creation of a new industry to manufacture the world's most advanced optical fibres, laser units, and laser repeaters.
★ The supply of additional Australian made products, components, services and processes worth many millions of dollars for use in the cable's manufacture.

In discharging its responsibilities to provide all Australians with competitive international telecommunications resources, OTC has gone beyond the present to the future.

A future in which Australians, and Australian industries, will lead the world.

OTC

QWERTY 10873

'Distributed switches' due

GENEVA — The future global Integrated Services Digital Network (ISDN) will require distributed switching architectures made up of small exchange modules, Japanese telecomms researchers believe.

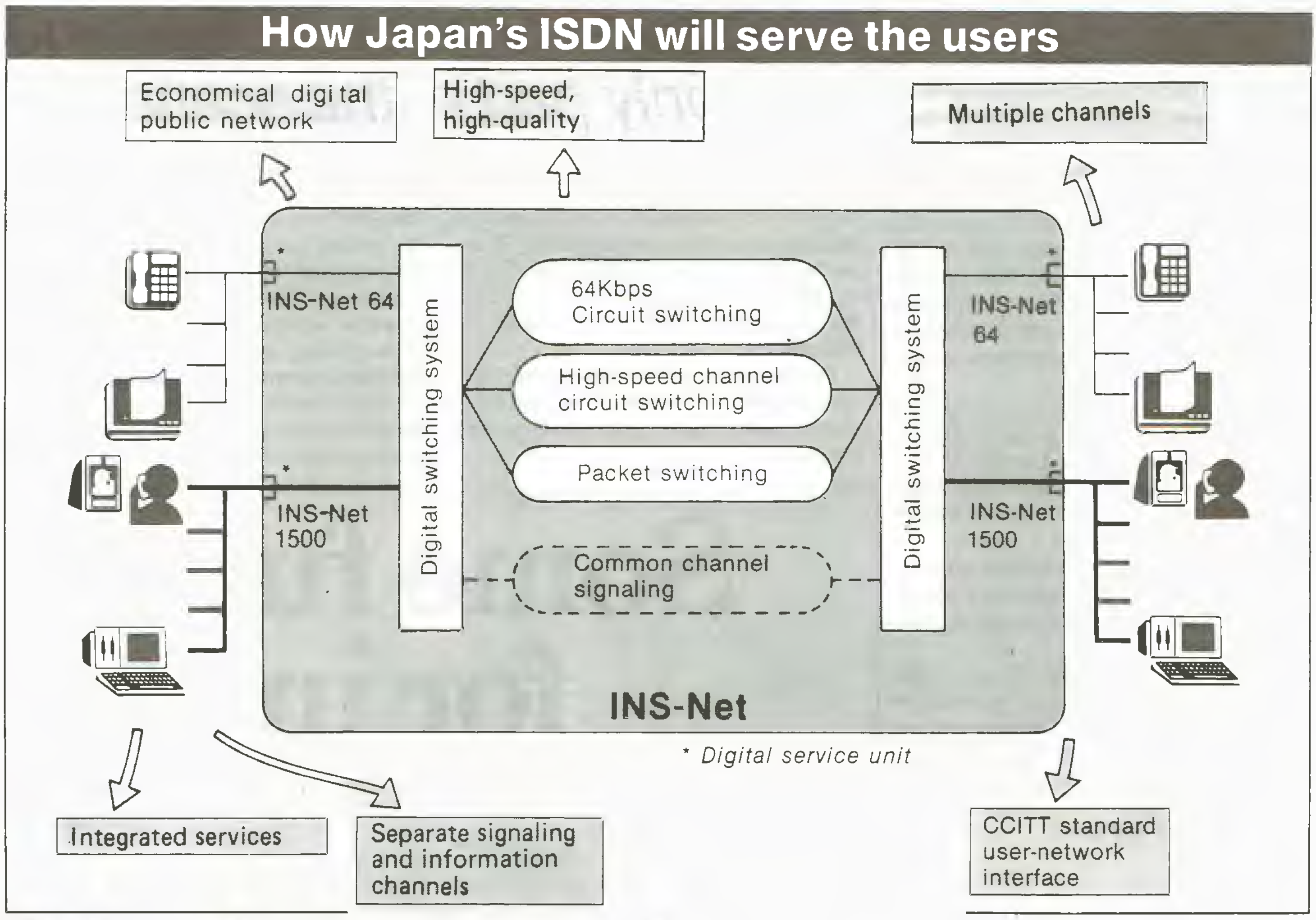
Hitachi's Kenichi Ohtsuki said in a paper delivered at Telecom'87 that integrated switching will divide all transmitted information into small unified blocks. These would be handled so fast and so uniformly that the exchange must be self-routing, without block-by-block software control. It would therefore be "effective to compose a switching system of a number of small switching modules and instal these modules in geographically distributed locations".

Other Hitachi researchers described a hybrid architecture that allows both distributed processing and centralised control. Discussing the 4th-generation PABX, they argued that data calls require a 16-to-32M-bit/sec data "highway" where 256-to-512 channels are available for every terminal port. Non-blocking switches would be required between such highways. They described a VLSI technology time switch with integral 1024 by 1024 matrix with bit and frame synchronisation that would handle such switching between data highways.

According to researching from Oki Electric, more than half of current worldwide investments in ISDN are in subscriber line transmission facilities and local switching equipment. Oki engineers believe the next-generation local switching system will have short local loop lengths serving subscribers, with remote switching modules at bridge-tap points of the existing copper cables connected to central office switches and the like by ultra-highspeed fibre-optic directional loops.

NEC's Yoshiyuki Koseki and others described a prototype expert system for digital switching systems that would help technicians pinpoint network equipment failures that would otherwise be extremely difficult to detect in the highly-integrated system of the future. The expert system is based on analysis of an abstract model of signal flow.

How Japan's ISDN will serve the users



* Digital service unit

INS fuelling 'tremendous development' in market

GENEVA — Corporate networks will take the lead in ISDN development, Fujitsu executive vice-president and head of Fujitsu Laboratories Dr Bun-ichi Oguchi told delegates attending the technical symposium of Forum'87. He was presenting one of the 16 oral and 10 written Japanese presentations to Part II of the forum, which dealt mainly with digital public and private networks.

NTT vice-president Yasuda Kitahara noted "tremendous development" in industry as ISDN implementations accelerate. He said according to an NTT survey of the market for I-interface services 16 per cent of Japanese enterprises intended to make use of the new ISDN services as they become available in Japan next year, 64 per cent of businesses would wait a while and only 20 per cent say they will not use the services.

According to NTT, 40 per cent of all long-distance circuits in Japan are now digital, and more than 500 local digital exchanges will be installed by the end of the year.

Field trials which began in September 1984 had confirmed that a maximum line length for 64K-bit/sec and broadband digital transmission was 7km, said NTT's Tohru Takahashi. The bit error rate for 64k-bit/sec was less than 1 in 10^{-7} and call setup time was less than 250ms, he said.

Japan's I-interface service will be offered from early next year under the name Information Network System — a digital overlay on the existing network. The user interface will conform to CCITT standards for the I series interface: primary rate access of 23B + D as well as H0 and H11 services will be offered. Packet-switching services utilising the D and B channels will also be available.

In Part I of the forum, the policy symposium, Fujitsu president Takuma Yamamoto predicted a large telecommunications growth will result from demand for digital services. He said a new criterion will become necessary for network evaluation, that of "information usage rate of information availability rate."

NEC chief executive Koji Kobayashi predicted major transitions in social structures from ISDN, with city workers decentralising to the countryside as telecommuting becomes easier. ISDN would also help alleviate unemployment by bringing more people into the services sector, he argued.

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Nano Engine arrives

SAN DIEGO — Tymnet/McDonnell Douglas Network Systems Co has introduced a desktop packet switch called the Nano Engine that is said to incorporate the intelligence of larger Tymnet engines.

The lowend switch, an eight-port unit designated the 7408, can act as a packet switch as well as a packet assembler/disassembler (Pad) for attached terminals, personal computers or hosts. In addition, it can switch data from a personal computer attached to one port to a PC on another port, bypassing the network altogether.

It supports X.25, SNA/SDLC, 3270 BSC and asynchronous protocols and is equipped with 1M-byte of memory. Two of the Nano Engine's ports can support data rates of up to 64K-bit/sec. The other six ports handle up to 19.6K-bit/sec, which is also the top asynchronous speed supported. Each port operates in half- or full-duplex mode.

Configuration commands can be downloaded to a Nano Engine from Tymnet's Network Control Centre net management facility. Each engine monitors itself and supplies reports about network and terminal links to the control centre via a diagnostic port.

The $US8000 switch is targeted at users seeking to build private X.25 networks without spending millions in the process. It will be available in Australia at the equivalent price in the first quarter of 1988, according to local distributor Tymnet/McDonnell Douglas.

Modems wage "marketing war"

By Jim Brown

LAS VEGAS — The battle over which error-checking protocol should be incorporated in developing international standards for point-to-point dialup modems (*Communications World*, November) spilled over to the show floor at Comdex/Fall '87.

In this battle, there are two camps trying to rally support for their protocols — the Link Access Procedure (Lap) protocol and the Microcom Network Protocol (MNP). Proponents of a Lap-based method argue Lap will yield the enhanced error-checking techniques needed as modem speeds increase. MNP backers say any standard needs to address the large installed base of modems already using MNP.

The battle took on new proportions when the Consultative Committee on Telephony and Telegraphy's Study Group XVII said in October it will consider including both a Lap-based method and MNP in its recommendation for error-checking in asynchronous modems that transmit synchronous data packets.

At Comdex, Hayes Microcomputer Products' efforts to urge the CCITT to give more weight to a Lap-based method were bolstered by Compuserve's and Western Union's decisions to instal Hayes' 9.6k-bit/sec V-series Smartmodem 9600s in their packet-switching networks. The announcement means customers of Compuserve and Western Union have the option of using a V-series modem, which supports a Bit-Oriented Lap (Lap B) error-checking scheme, to access the two networks.

On the other side of the show floor, Microcom continued to push for its MNP error-checking scheme, which is used by Tymnet/McDonnell Douglas Network Systems, Telenet Communications, IBM's Information Systems Network and General Electric Information Services Co.

Although both Hayes and Microcom are campaigning for different protocols, modem vendors here said one does not have a clear technical advantage over the other. Most vendors said the debate is nothing more than a marketing war that confuses users.

"This is not a battle we feel is worth fighting. We'll just give our customers whichever error-checking method they want," said Richard Clanin, director of modem marketing for Cermetek Microelectronics. Cermetek currently offers both Lap B and MNP as options to its line of 9.6K-bit/sec modems.

Existing Lap B and Lap D protocols are based on the International Standards Organisation's (ISO) High-Level Data Link Control (HDLC) protocol. Lap B is used for error-checking on X.25 packet-switching nets. Lap D is the CCITT's recommendation for signalling on the D channel of Integrated Services Digital Networks (ISDN).

Vendors said the CCITT study group is considering creating a modified version of Lap D, known as Lap-Modem (Lap M). Lap M and/or MNP will eventually be included in the CCITT's V.42 modem recommendation.

Should CCITT include both methods in its recommendation, one would be named a primary method and the other a backup. The recommendation, vendors said, could also include a feature that enables the sending modem to switch to the backup method would be used.

The protocol named as the fallback method may actually be phased out over time, vendors said.

Hayes argues that since documentation for existing Lap protocols is more widely available than MNP documentation, developers will find it easier to implement a Lap-based method.

Such a Lap-based method would also allow users to migrate to dialup X.25 packet-switching and ISDN services more easily, said Gary Betty, senior vice-president at Hayes.

MNP was written for Microcom by Greg Pearson, the vice-president of technology transmissions. With a Lap-based protocol, personal computer users would be able to support multipoint connections.

Because Lap B is used in X.25 packet-switching networks and Lap D is used in ISDN, users may reap more connectivity options with a Lap-based protocol instead of MNP, according to Betty.

Pearson disputed the increased connectivity claim, however. He said that because X.25 uses Lap B and a point-to-point modem connection would use Lap M, there would be an incompatibility in trying to access a packet network from a device supporting Lap M.

Unisys micros replace Sperry

LAS VEGAS — Unisys Corp has introduced three microcomputers based on Intel 80286 and 80386 microprocessors designed to support the MS-Dos, Xenix System V, Windows 2.0 and MS OS/2 operating systems. The Personal Workstation 2 family is targeted mostly at Unisys's installed base and is expected to gradually replace the existing (originally Sperry) range of PC HT and PC IT.

MS OS/2 will reportedly be supported on the entire line, while Windows 2.0 will be supported on the Series 300 and 500, the two 286-based micros, and Windows/386 on the Model 800. Xenix is available for the Series 500 and 800.

Unisys also enhanced its Usernet network with IBM Token-Ring support running at 4M-bit, with the ability to link more than 100 workstations and servers.

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DATA COMMUNICATIONS

DEC Australia's technology plan puts stress on comms research

High hopes for design centre

SYDNEY — Digital Equipment Corp (Australia) Pty Ltd has opened a state-of-the-art research and development centre in Sydney that is intended to design communications products tipped to earn $A100 million a year on world markets within five years.

The Australian Technology Centre is part of a 10-year, $A100 million R&D program by DEC's Australian subsidiary under a partnership-for-development agreement now being negotiated with the Federal government. The agreement — part of the government's new information industry strategy of seeking increased local product development and exports by transnational companies — calls for DEC to spend more than $A25 million a year on development in Australia by 1992.

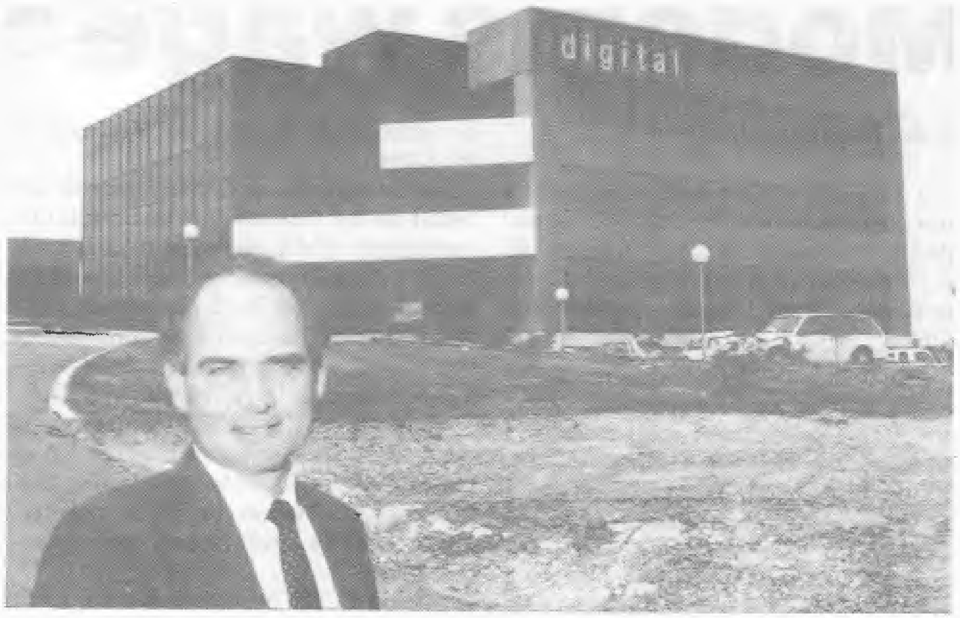
The centre will house a networking and communications (Nac) research and development group modelled on DEC's corporate development organisation Nac Engineering, the second such overseas offshoot after one in Reading in the UK. When fully staffed the Nac operation will be one of Australia's largest industry R&D centres.

Nac (Australia) is to develop computer communications products for worldwide distribution, particularly wide-area network (Wan) products, and to develop into DEC's worldwide centre of expertise in Wan terminal interconnection technology. The first new product, a custom-designed eight-line terminal server which can connect high-speed devices to Ethernet, is already being developed, and work on an unspecified software product is due to start shortly. Both products will be available internationally next year.

An earlier locally-designed product, a statistical multiplexer, is being built in the US.

A spokesman, John Derett, said the centre was tied into DEC's worldwide network and also had a highspeed link to the company's headquarters in Chatswood, Sydney. The network, apart from electronic mail, was used to transmit board layouts for evaluation in the US, from where they would be sent to DEC's Taiwan manufacturing facility where prototypes would be built and despatched to Australia.

The centre will also be the new, expanded headquarters of DEC's Computer Special Systems (CSS) division which designed products such as the VT225 terminal that was recently released at Comdex. DEC Australia managing director Frank Wroe said CSS planned to use as many third-party subcontractors as possible and would essentially act as project managers, quality controllers and schedulers for them.


Bob Starkey, manager of Nac (Australia), and his hotbed for local products

Wroe, noting that the Pacific Basin is one of the world's fastest-growing economic regions, said it was evident that Australia is well-positioned geographically, politically and economically to exploit the region's "potentially immense market for technology". DEC Australia intended to supply a growing proportion of new computer communications products, he said.

DEC Australia would recruit and train local talent, use local industries and buy materials locally and hire more than 100 engineers within the next five years, said Wroe.

DEC's corporate manager for wide-area communications, Jac Simensen, said he expected senior Australian engineers now working overseas to be lured home by the chance to work in a strategic Australian R&D centre.

A cadetship and graduate recruitment program was being introduced to enable young Australian engineering talent to work at Nac (Australia) and be at the forefront of technology.

Expansion into a hardware group was envisaged for later, with opportunities for electrical and mechanical engineers, industrial designers and other experts.

DEC Australia at present has 1320 employees located in 22 Australian cities and towns. It had revenues of $A285 million in fiscal 1987, up 27 per cent from last year.

Frank Wroe . . . plans for subcontractors

Announcing a $345 async/sync converter

CASPA is a small. stylish box that...

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Rationalisation bid fails

ROME — Italy's hopes of consolidating its telecommunications equipment industry have been dashed with the collapse of a joint venture agreement between Fiat SpA and IRI-Stet, the state-controlled industrial conglomerate. After two years of arduous negotiations, Fiat said in a terse communique issued from its Turin headquarters that it is pulling out of the deal "with regret and bitterness".

Italian efforts to rationalise equipment development and production, with a view to making its telecommunications industry more attractive to foreign partners, will be severely set back by the collapse of the venture, said Stet officials interviewed here.

IBM the target of Unisys deal

By Paul Korzeniowski

BLUE BELL, Pennsylvania — Unisys Corp is to buy Timeplex, Inc for about $US350 million in a bold move aimed at enabling the mainframe maker of offer custom network products and services that compete head-to-head with IBM.

The acquisition of Timeplex, the largest manufacturer of T-1 (M2) multiplexers, complements Unisys' stated intention to add a PABX to its product line. Unisys also has a deal with Paradyne Corp to resell its line of modems and a $US50 million OEM deal with Doelz Networks, another multiplexer maker.

As part of the acquisition, Timeplex chairman and chief executive officer Edward Botwinick will become senior vice-president of Unisys and president of a new division, Unisys Networks. He will report directly to Michael Blumenthal, chairman and chief executive officer of Unisys.

Although the deal must be approved by Timeplex stockholders this month, analysts expect it to go through because stockholders this month, analysts expect it to go through because stockholders will receive more than the current book value of the company.

According to Timeplex Australia managing director Gary Fahey, Timplex will continue to operate autonomously for the time being.

Eventually, however, the two plan to develop new communications products and bring all Unisys equipment under the aegis of the Unisys Network Management System (UNMS), designed to compete with IBM's Netview and AT&T's Unified Network Management Architecture. UNMS will be based on Timeplex's current network management product, Unified Network Management System.

The deal transforms Unisys from a laggard to a top competitor in the connectivity game. Other computer vendors are looking to align themselves with communications vendors, but fear the pool of eligible partners is drying up. Analysts also argue that some communications vendors are undervalued following the recent stockmarket slump, and expect dramatic restructing of the communications industry.

"Timeplex said a small company cannot compete in the communications business," said one analyst. With a successful company like Timeplex raising the white flag, other vendors may begin to wonder if their pockets are deep enough to play in the rapidly changing and highly competitive communications market.

Europe hosts comms world

900 vendors show wares to huge throng in Geneva

By Luis Huesch

GENEVA — The world's premier telecommunications show and conference, Telecom '87, held here in late October, this year presented a week-long orgy of technology that drew an unprecedented number of visitors to this choked conference capital.

The International Telecommunications Union (ITU), 163-member specialised United Nations agency which hosted the four-yearly event for the fifth time, registered more than 250,000 visits to the Palais des Expositions next to Geneva airport, where some 900 vendors demonstrated their latest technological offerings. A top-drawer assembly of some 25 policy makers attended the concurrent communications conference, Forum 87.

Visitors crowding the show and conference during the day were forced to go as far as Dijon in France at night, for hotels were booked out in a wide perimeter even though they charged prices of $US200-300 a night. Some delegates even flew home to London every evening.

Fortunes were also spent on showcasing the equipment: Alcatel is rumored to have outlaid $US20 million on its multifaceted representation which included hiring the Orient Express (the multinational telecomms giant admits to spending $US10 million); IBM invested $US15 million in its simple "salon" suspended over concrete columns, where it showed its new Rolm PABX; Siemens says its high-tech tent cost $US8 million, and so on.

Heads of state or government, including Prime Minister Bob Hawke; telecommunications ministers including France's Gerard Longuet and West Germany's Christian Schwarz-Schilling; PTT chiefs and top executives of the world's foremost telecomms conglomerates including AT&T's Jack Olson, Alcatel boss Pierre Suard, Northern Telecom CEO Edmund Fitzgerald, NEC chairman Koji Kobayashi, Fujitsu president Takuma Yamamoto, Philips chief V Dekker and Siemens CEO Karl Kaske flocked to Geneva to discuss policies, pave the way for contracts in corridor conferences, seal business deals and joint ventures, or to simply mill around the exhibits with more than 50,000 comms managers, officials, engineers and high-tech sightseers.

Held under the motto "Communications Age: Networks and Services for a World of Nations", Telecom '87 above all succeeded in putting a human face on the impending impact of the ISDN (Integrated Services Digital Network) with a profusion of enduser image stations, video telephones, combined voice/data terminals and high-resolution Group 4 facsimile machines. Much of the equipment on show for hands-on demonstrations was linked not only between vendors' stands but across the networks of different PTTs to pilot facilities and development laboratories around the world.

Linkages in general were particularly in evidence, embodied in new products from computer vendors such as PABX interfaces or expressed in joint ventures and research projects announced during the show. These included pacts for value-added network ventures such as those between IBM and Siemens, IBM and Bell Atlantic, Siemens and DEC, Plessey and Telenet, and joint ventures in packet-switching such as the one between France's Sesa (which supplied much of Australia's Austpac public X.25 network) and French switch maker Alcatel CIT.

Alcatel's Pierre Suard

Multivendor enduser connectivity was the other strand that stood out in the puzzlingly complex fabric of Telecom '87: some 21 corporations and PTTs demonstrated live electronic messaging under CCITT X.400 protocol across Europe, the US and Japan on equipment from IBM, DEC, Hewlett-Packard, Nixdorf, Olivetti, Unisys and Philips. The participation of nine PTTs and carriers — AT&T, British Telecom, West German Bundespost, NTT and KDD of Japan, Telenet of the US, France's Transpac, the Swiss PTT and Dialcom — was seen as paving the way toward a global messaging network.

In the same vein, but aimed at global PABX interworking, Siemens proposed a new corporate networking standard in Geneva, Cornet, which it said had been favorably received at the highest levels of the CCITT.

Telecom '87 also served as the backdrop to a bevy of new product announcements, ranging from PTT switching equipment and software through new intelligent telephones right down to the $US30 Mark V from Alcatel STC Australia, which is to become the nation's standard subscriber equipment from next year. Particularly omnipresent were enduser devices, a market estimated at $US126,000 million worldwide now and said to be growing by 40 per cent a year.

Australia was marginally represented at Telecom '87 by a small stand jointly sponsored by Telecom Australia and the Australian Trade Commission (Austrade), with minor participation by Alcatel STC, Datacraft and the Telecom/University of Western Australia packet-switching equipment venture, QSPX. AWA and Codan had separate small booths where they showed radio communications equipment. The joint Australian stand, under the flag "Innovation down under", did a roaring trade mainly in koalas and kangaroo pins, supplies of which ran out halfway through the show. Stocks had to be replenished by overnight delivery from the Australian trade mission in West Germany. The stand also served as a meeting place for the handful of Australian visitors, including Telecom managing director Mel Ward and Overseas Telecommunications Commission chief George Maltby. Both attended the concurrent forum of PTT chiefs, lawyers, vendor and user representatives, who thrashed out regulatory standards and economical/political communications issues in a sort of world academy of experts.

France's Gerard Longuet

Judge Harold Greene, who presided over the breakup of the AT&T monopoly in the US, argued strongly for deregulation and greater competition, particularly in Europe. He castigated PTTs for impeding progress by regulatory artifices, applauded Japan for its "usual farsightedness in these matters" and warned that "those nations that insist on the maintenance of their traditional monopoly . . . may find that they will be left behind" and miss out on industrial and business advantages brought by freer telecommunications.

"Free and wide-ranging competition in manufacturing (for the communications marketplace) has all pluses and no minuses," said Greene. He applauded the role of the PTTs in providing cross-subsidised basic services and counselled "operational competition by a number of private entities, coupled with vigilant regulation by government" as the best course to steer in the current liberalisation movement.

George Maltby, OTC's managing director

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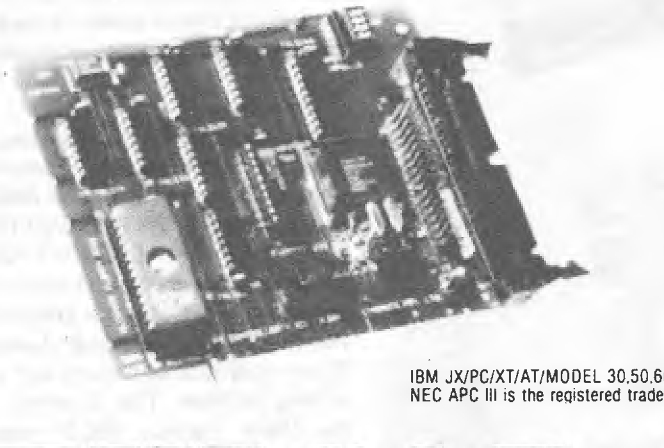

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900 vendors show their wares to huge

It would be impossible to detail all of the interesting new products shown by the almost 900 vendors at Telecom '87, so — apart from a few items highlighted in separate news stories — here is a quick company-by-company rundown to give you at least an overview of what must be ranked as the world's most prestigious communications exhibition.

Showing the Aussie flag

This "corporation", represented by a stand jointly sponsored by Telecom and Austrade, introduced the nation's next-generation standard subscriber telephone, Alcatel STC's Mark V (as reported in the November issue of *Communications World*). The phone, in a prototype plastic version that would be more at home in a kindergarten, has a plastic soft-touch keypad and 10-number memory for up to 32 digits each, can recall last and second last number on busy, works with tone or pulse dialling and weighs 555g. The phone uses surface-mount device technology, was developed according to Telecom specifications and will be built in a new STC facility designed for the purpose.

Mark V . . : to be made by STC Australia

ALCATEL NV:
This multinational telecommunications conglomerate was represented by multiple stands, including a corporate pavilion featuring the E10 and System 12 network switches running advanced telephony and ISDN applications such as colour video telephone transmission; Digitel C and Digitel G ISDN handsets with appointment reminder function and alphanumeric keypads; the new *System 900* European *cellular mobile radio* system built on System 12 technology by SEL of West Germany and Thomson Radiotelephone of France; a 400dpi Group 4 fax machine and a new range of IBM PS/2 compatible personal computers including an 80386-based machine aimed at desktop publishing and Cad/Cam called the *PS700*. Alongside the PS series Alcatel showed its *latest work group systems*, *the 386 XL* and *386 NS*, said to feature advanced terminal processing.

Alcatel also highlighted the 8826 *frontend processor* which it claims is "the biggest and most powerful of its kind", with up to 1024 lines and up to eight IBM host connections. Said to be fully compatible with IBM's ACF/NCP software, the 8826 reportedly averages 3.5 Mips due to its four-port memory design, making it "at least three times faster than the industry's most powerful communications processor". Users are invited to pass on to me their own verdicts on this beast. . .

Alcatel NV's public network systems group of Brussels announced a new fully digital (including optionally CCITT #7 signalling) small-to-medium exchange called the *Small Stand Alone (SSA) system* capable of handling from 256 up to 3840 subscriber lines, or more than 6000 with digital remote subscriber units. The switch, said to be ideal for rural areas, mining towns, tourist centres or as emergency mobile backup systems, offers fully automatic maintenance and administration features, with twin disks storing software and directory databases. Said to be compatible with all System 12 and E10 exchange applications software, the SSA will be ready in early 1989.

Alcatel's Swiss subsidiary STR showed what it claimed is a world first: the *Ovid-4* digital studio quality, long distance video conferencing system using four video signals over a single optical fibre link. The system is aimed at studio-to-studio or satellite-to-studio connections.

AT&T:
The US telecommunications giant showed its *SLC* 120 Network Access System*, a flexible PTT primary multiplexer with 4x30 channels that can be connected to a digital network via 2M-bit/sec CCITT compatible interface. It can be used to quickly extend line capacity or modernise small exchanges or to supply dedicated digital services to large business customers via optical multiplexer linked to the nearest public exchange. The system was developed by the AT&T-Philips joint venture ATP, which will build the SLC 120 in the UK. AT&T displayed its *Datakit VCS* virtual circuit switch, a hardware packet switch said to be capable of establishing up to 3500 virtual circuits simultaneously and of switching more than 44,000 packets a second. The vendor is positioning the Datakit VCS as an evolution toward ISDN.

ATP also displayed a series of ISDN products, including the *IAS-200 terminal adapter*, the *IAS-1375D digital telephone* terminal and the *IAS-120 digital handset.*

The IAS-120 digital ISDN telephone set from AT&T and Philips Telecommunications provides voice service and ISDN features

BRITISH TELECOM:
BT launched a *voice/data PABX, the SX2000S*, handling up to 600 extensions and using the same software as the larger BT SX2000 and can operate under British Telecom's DPNSS (digital private network signalling system, an ISDN workalike). The company also introduced the *Stanza range of departmental voice/data systems* integrating telephony, computing and applications software through a host command interface developed by its subsidiary Mitel. Stanza is the first of BT's customer premise equipment initiatives and offers access to X.400 standard messaging, facsimile and telex services.

The new *Mezza communications system* combining telecommunications and computer technology was displayed for the first time outside the UK. Mezza is a Unix-based departmental multiprocessor computer providing automatic voice message capability, word processing, electronic mail, spreadsheet handling and calendar functions. Also shown was BT's *Poet (PABX-oriented executive terminal)*, an analogue feature-phone handset with LCD screen said to function with most PABXs and capable of two-wire communications over existing phone lines. The company showed a range of telephones including the *Qwertyphone integrated voice/data terminal* which has a full alphanumeric keyboard, 10 function keys and a telephone dialling pad plus a four-line, 32-character LCD screen and builtin V.21 modem, as well as the *2100 Series messaging terminal* integrating VDU, keyboard and printer for point-to-point connections via the telephone system. Other products shown included the *DM 4962X V.32 modem*, the *DM 4141X V.33 modem*, a 19.2k-bit/sec baseband modem and the *Lektor encryption unit* using a BT proprietary algorithm or optionally Des plus novel removable "user tokens" with PIN numbers that give individualised access to authorised users. The unit also comes in a facsimile encryption version compatible with Group 3 machines.

BT also launched a fully-integrated *voice/data PABX, the SX2000S,* aimed at small-to-medium-businesses and the leisure industry. A scaled-down version of the SX2000, it handles 100-600 extensions and exchange lines and uses the same software. It, too, can be used with BT's digital private network signalling system (DPNSS) which extends ISDN-like facilities to switches interconnected over private networks.

CANON:
Canon stressed the ISDN's image transmission capabilities, showing three new Group 4 facsimile systems, the *Fax I4001*, a plain paper laser printer unit with ISDN interface; the *Fax L4000/5000* Group 3/Group conversion unit with multiplexed digital and analogue line interface; and the *Fax I4003*, a mixed mode (Group 4 Class 3) terminal with advanced text and image editing facilities. This terminal, made for the West German ISDN network and demonstrated also on the German Bundespost (PTT) stand, transmits text data as code and image data in fax format, has a 17in CRT screen, a mouse, and a 3.5in hard disk and floppy disk for document storage.

Canon also highlighted the *Canon Telematic System (Cats)*, consisting of microcomputer, Group 4 facsimile and teletex terminal and suitable for a variety of text and image communications, electronic bulletin boards, and for shared database applications.

DIGITAL:
DEC introduced the *Ethernet Terminal Server* and *PABX-Computer Interface (PCI)* for connecting terminals to host computers or Ethernet networks via PABXs and existing telephone wiring. Initially tested in Europe — with interfaces provided for products of major switch vendors including Plessey for the iSDX, Telic-Alcatel for the Opus 4000, Telenorma for the Integral 333 and Siemens for the Hicom PABX — the server will be introduced in Europe and elsewhere as soon as PABX interfaces are released. In principle, all ISDN-ready switches with the S2 interface to 30B+D primary rate ISDN services can be used with the terminal server. Digital says the product complements its family of servers, permitting remote and scattered terminals to be linked to Ethernet and obtaining all available Ethernet services simply and cheaply. The PCI interface optimises coupling between the PABX and data processing equipment, exploiting the advantages of ISDN standardisation.

ERICSSON:
The Swedish-based concern premiered a new small version of the MD110 digital PABX, a voice/data exchange with 40-160 extensions, as well as a new private radio system designed to be linked into an MD110. The company also unveiled *three new Axe* facilities — Business Group Services (centrex), Virtual Network Services and Digital Leased Services — that can be incorporated in the modular exchanges.

Ericsson also demonstrated a *new small packet switch* of the Eripax series (designated the PS 30), an X.25-SNA/SDLC compatible mains-powered unit with hard

throngs at world orgy of comms technology

disk program/data storage capable of handling up to 26 terminals and trunks. The vendor targets the PS 30 to banks and retail chains for cost-effective wide area data networks made up of many small dispersed sites.

The vendor displayed a new family of *modular digital multiplexers (Zah 2/140 series)* on cards using VLSI and surface mount technology. The cards, offering 2/8, 8/34 and 34/149M-bit/sec mux functions, are housed in a card cage with microcomputer bus that permits drop/insert and "skip" multiplex configurations. A *programmable PCM mux — the Zak 30-5* which converts 30 VF channels or 64K-bit/sec data channels into a 2.048M-bit/sec digital bit stream or vice versa — a PCM line repeater for 2M-bit/sec and optical fibre terminals for 8,34 and 565M-bit/sec system form part of the Series 7000 transmission products, of which the ZAH 2/140 family forms part.

The company used its single-chip 8x8 channel optical switch — a world first unveiled last year — to switch video pictures between terminals on a 565M-bit/sec optical fibre link at the show.

FUJITSU:
The Japanese computer and communications vendor displayed a wide range of ISDN products, from switches such as the *Fetex-150* and *Fetex-9600* to transmission systems to the *Image Station* desktop terminal for simultaneous highspeed transmission of voice, data and images. The Image Stations were linked to switches from NTT, Northern Telecom, AT&T and Fujitsu. The company also demonstrated a networked expert system, the *Co-operative Expert System*, running over 15 personal computers linked by optical Lan.

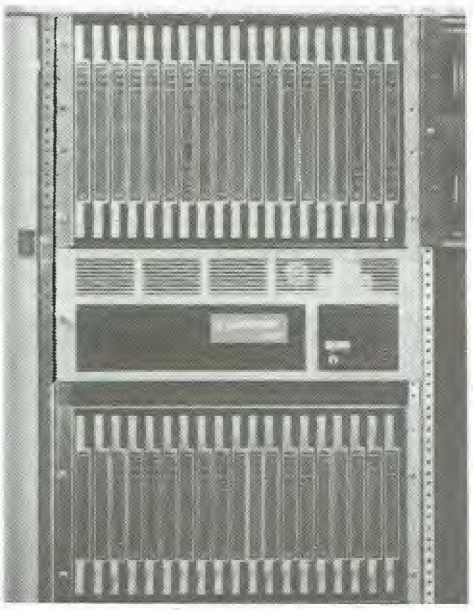
GANDALF:
Canadian communications specialist Gandalf Technologies launched its *Starmaster* multi-host connectivity solution, a *bandwidth manager* designed to process asynchronous traffic like a data PABX, gateways and bridges like a local area network and synchronous host connections like a matrix switch. The release signals Gandalf's intention to become a complete information systems vendor selling both networks and services. The new network processor can be combined with optional hardware/software components called Starsets, including *Starport, an integrated multi-user MS-Dos processor/Lan server* that provides each attached terminal user with a dedicated NEC V20 CPU and 648K-bytes of Ram; *Starlink, a 2M-bit/sec multiplexer* and 10M-bit/sec optical link; and *Starpath*, a variety of integrated multiplexers, Ethernet interfaces and integrated protocol converters including X.25.

Gandalf also introduced the Starstation series of diskless workstations, including the *Star Voicestation* which combines a hi-res graphics terminal with multiline telephone and offers voice mail and Disoss integration. Also part of the series is the *Star Workstation*, an ISDN unit that can be operated at 64K-bit/sec synchronous and/or 19.2K-bit/sec synch/asynch on the same two-wire circuit in the one session.

HEWLETT-PACKARD:
Arguing that increased competition within the industry because deregulation and the implementation of new technologies will make production companies more cost-conscious than ever, HP introduced the *3065AT Combinational Tester*, which provides in-circuit testing of PC boards as well as functional test capabilities. The device, optimised for the telecommunications industry, can perform digital signal processing routines including mixed-signal codec testing as well as ISDN-type serial digital testing. High-frequency board testing can be performed with the aid of a specialised access card. HP also announced specialised *Telecomtest software* for the board tester, including a device library with a full set of Siemens ISDN devices. The Telecomtest suite, which automatically generates standard analogue and digital in-circuit tests, will initially be available in Europe only.

KDD:
Kokusai Denshin Denwa Co, the Japanese international carrier and communications vendor, showed its *Invite 64 Visual Telephone/Videoconference System*, said to be the world's first to transmit color moving images and audio signals simultaneously. Invite 64 compresses the signals into a single 64k-bit/sec digital telephone circuit. The system was shown live using leased lines between Geneva and Tokyo. KKD also trialled the *Quick-Cuic* (Quick Catch-Up Image Communication) system, which

(Continued page 20)



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900 vendors show their wares at

(Continued from page 19)

makes innovative use of a 9.6k-bit/sec transmission rate to provide smooth interactive image communication or to let users retrieve image information from specialised databases. The system can transmit rough images in the early stages of transmission to give the user an idea of whether he or she would want to receive that particular picture, then progressively enhance the quality of the image if required.

KDD visual telephone/video conference system

MCDONNELL DOUGLAS:

The company, which had announced its new entry-level eightport packet switch 7408 or Nano-Engine in the US just before Telecom '87, introduced *two new voice and data multiplexers* in Geneva to underscore its commitment to ISDN technology. *The 7008* provides up to eight high-quality channels that can be either simultaneous voice circuits or a mixture of voice and data over a single 64K-bit/sec digital line. A second model, *the 7040*, offers up to 40 channels over four 64K-bit/sec lines and is intended for use between PABXs and other digital exchanges. The vendor claims that by taking maximum advantage of the throughput possible on 64K-bit/sec lines the new products can usually make 2.048M-bit/sec (M2 or Megalink) connections unnecessary in private networks. A data interface card can be used to configure these muxes for a mix of voice and data, e.g. 9.6k-bit/sec or 19.2k-bit/sec can be used for point-to-point synch/asynch applications or as internode trunks in private data nets. Lowspeed data from dial-up voice channels can also be processed by the optional card.

The company also announced its next-generation line of *multiprocessor packet switches, the mid-to-highend Series 7500 or Turbo-Engine* using Motorola 680X0 processor chips in a VME bus-based modular open architecture capable of running Unix communications software or custom applications written in C. The Turbo-Engine is backward compatible with existing Tymnet network products including the ISIS operating system, conforms to X.25, X.28 PAD and X.75 as well as IBM protocols including full SNA. McDonnell Douglas says it will offer onboard ISDN primary rate (30B+D) interfaces for cost-efficient host-switch and intra-network connections.

MITSUBISHI:

Mitsubishi Electric Corp showed a Group 4 fax and a mobile memo fax aimed at fleet operators called the FA-10S/R, a lightweight, vibration-protected Group 3 unit. The vendor also displayed an *integrated voice/data terminal* combining ISDN telephone, sketch and memo pad, realtime telewriter and electronic telephone book.

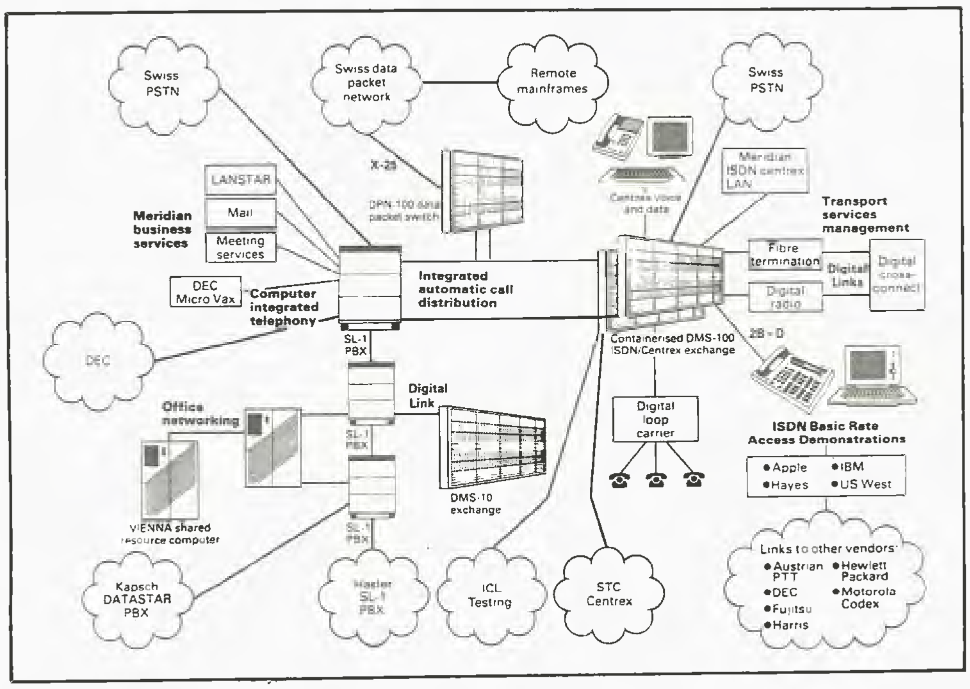
NEC:

The only Japanese company to have its own separate stand at Telecom '87, NEC displayed a wide range of narrow-band to broadband ISDN systems, including public switches and PABXs, integrated voice/data terminals, a 64k-bit/sec videotex terminal, home information and control systems, satellite equipment and multi-media multiplexers.

A prototype of NEC's next-generation optical exchange, the Neax 32, was shown, as well as the Neax 61 digital station exchange for ISDN applications, and the Neax 2000 IMS, an ISDN PABX.

NIXDORF:

The West German computer vendor strongly featured its digital switching capacity, showing among other products the *DSS 8818 series of ISDN PABXs*, including the Models 30 and 80 for up to six (12) trunk lines and 30 (80) extensions; the Model 600 for up to 70 exchange lines, up to 600 extensions and up to 123 concurrent connections; and the Model 3000, which handles up to 300 exchange lines, up to 3000 extensions and up to 506 concurrent connections. Shown with the switches were digital handsets (Digifon) and terminal adapters (DSVA) for connection of displays, workstations or PCs. The adapters are connected over up to 700m by two-wire telephone line to the PABX, where each is allocated a digital line card (DTS) using special Nixdorf chips implementing the ISDN basic rate. If the adapter is connected via a digital handset, simultaneous independent voice/data transmission on the one line is available.



Northern Telecom's demonstration of an integrated digital networking environment at Telecom '87

Fujitsu Image Station . . . simultaneous transmission for voice data and images

The company also showed an analogue *Micro 8 Broadband Exchange* for inhouse video-conferencing and video telephony for up to eight subscribers. The system is intended for use on West Germany's Broadband Switching Network and can optionally handle videotex.

NTT:

Nippon Telegraph & Telephone Corp displayed its *D70-T digital public switching system* linked to ISDN terminals such as digital telephones including a 7kHz adaptive pulse code modulation *handset* with S/T interface for use with the basic rate service and the *Scopephone* videophone. The company also showed Group 4 facsimiles and a high-resolution digital version of Japan's Captain videotex system, *High-Captain*. A video-conferencing system, public and personal telephones using IC cards for access, cellular and other mobile phones, optical fibre fusion splicing machines, voice mail and a 256 QAM digital microwave system were demonstrated.

NORTHERN TELECOM:

The Canadian-based switch maker, which has a joint venture with AWA as AWA-Nortel in Australia, had an impressive ISDN demonstration in which it hooked up a containerised DMS-100 digital exchange with its DPN-100 PTT packet switching exchange, a DMS-10 exchange and three SL-1 PABXs as well as a wide range of peripheral equipment including the new *T2317 ISDN telephone.* Links to other vendors facilities and to international PTT and private nets were demonstrated (see diagram).

NT also showed a prototype of a hands-free *audio/video multipoint teleconferencing system* providing digital voice links of good AM radio quality while letting users share video images, scanned documents or graphic displays from PC applications. The voice coding of a 7KHz wideband audio signal uses proprietary hardware developed by Bell-Northern Research (BNR) but conforms to CCITT standards. BNR also developed a channel end-to-end encryption system for use on ISDN lines capable of encoding both voice and data. The system uses public plus private key encryption, with key distribution via the ISDN D-channel authenticating both the handsets used and the actual users.

OKI:

Oki Electric Industry Co launched an ISDN multifunction video telephone that handles voice, video and still images simultaneously at the basic rate transmission speed of 64k-bit/sec. Called the *Multimedia Interface Digital Telephone*, the unit can transmit high-resolution color images, both still and moving. Programmable keys give access to telephony services and a large LCD shows directory information, call/cost logging and elapsed time, among other data. The system is modular and users can add a codec and camera/monitor for quasi-video transmission and reception later. Voice and data can be multiplexed on a B-channel at 8 or 16k-bit/sec.

Oki also displayed a *new cellular radio telephone unit that packs a 4.8k-bit/sec error-free modem* for communication with computers, Group 3 fax machines and databases. The unit uses echo-cancellation and can be operated by voice commands for totally hands-free use.

OLIVETTI:

Olivetti Telecommunications and Information Systems showed a prototype of its *Personal Telematics terminal*, a multi-functional workstation developed around personal computer technology and running MS-Dos-based software. The hardware used differs according to type and number of services required. Telex, facsimile, teletex, voice and ISDN-derived services can be provided, each via a dedi-

NTT 7kHz digital telephone . . . with S/T interface

world orgy of comms technology

cated addon board. Further facilities, such as a X.25 PAD, can be added via specialised controller boards. Received telex, fax, or teletex messages are retained in dedicated memory even during a power failure. The workstation software handles transmission and user interface concurrently, with incoming messages automatically being stored to memory. Outgoing messages can be composed using standard WP programs or graphics packages. Olivetti also demonstrated a minicomputer-based voice messaging system and showed X.400 messaging applications.

PANASONIC (Matsushita):
The company showed a *small digital PABX (Xm-128)*, a *time division multiplexer (AD-8500)*, a Group 4 fax with both ISDN and PSTN ports and Group 3/2 protocol conversion (UF-6400)) and a multi-line telephone with builtin RS-232C interface. In its main demonstration, Panasonic featured its 100M-bit/sec optical fibre loop local area network developed with NTT linking a variety of peripherals via the AD-5100 multiplexer. A mini-ISDN, the LAN connected the *Panafile NS6100 optical disk-based electronic filing system* with builtin facsimile and editing functions; the new *Fax Partner PC fax card* with background mode operation; a *high-res* 400 dots/in *flatbed scanner (FX-RS505)* and 400dpi *laser printer (FP-L310)*.

Panasonic also showed Group 3 facsimiles, cellular phones and pagers, a small *key system (Panaphone)*, as well as audiovisual and "home automation" products, including a communications terminal with LCD display and still image camera and builtin computer for messages and synthesised voice output.

PHILIPS:
Philips demonstrated two text-handling modules for its Sopho-S PABXs, one called the *Text Server* and intended for medium to high volume traffic, the other called *Telex Server*, for low-volume traffic. In conjunction with the PABX, the text server connects scattered standalone equipment and provides a gateway for PCs and WP equipment to the public switched network. It also provides internal and external electronic mail and access to telex and teletex services. An X.400 capability was announced. The store-and-forward telex server provides inhouse PC/WP users with a simple interface to the public telex service and also handles internal electronic mail.

PLESSEY:
Plessey showed a new version of the System X digital public exchange it has developed with GEC, a switch based on new VLSI components said to allow packing an entire 60,000-circuit matrix and its control electronics into a standard System X equipment rack. The company displayed a wide range of coin and card telephones, including the new *Diamond* range of intelligent pay phones and the *Public Business Terminal*, which provides access to telex, electronic mail and videotex services over a full color 10in display, in addition to normal pay phone features. Also shown was the Retail Pad 2561, an interface between credit card terminals and the packet-switching system intended for credit authorisation. It can also be used for stock control and other data applications. An SNA emulator Pad as an IBM X.25 interface and a similar unit for Unisys B25 micros were also shown.

Siemens CP113 . . . compact switching processor for multimode networks

RICOH:
The Japanese fax maker showed the Ricoh Radar Net, a distributed architecture Lan that can select any of several different communication routes automatically to transmit a variety of data including color images simultaneously. Ricoh also displayed a Group 4 plain paper facsimile, the *RIFAX D50001*, that can be connected to both analogue and digital lines and a two-color facsimile that can produce copies in both red and black simultaneously. Designated the *RIFAX 810SR*, the unit employs a color scanner with red and cyan filters. The signals are transmitted as usual and reproduced on special thermal paper with both layers of black and red pigment.

ROCKWELL INTERNATIONAL:
The company's Semiconductor Products Division announced two new board-level highspeed modem modules aimed at OEMs, one a *14.4k-bit/sec leased line unit*, the other *a 9.6k-bit/sec dialup modem*. Both use Cmos low-power technology and will be available in Dip packages in volume samples next year. The new *R1496MM* unit complies with CCITT V.33, V.32, V.29 and V.22bis and can automatically shift to 9.6kbit/sec full duplex dialup mode if the leased line connection fails. The modem uses Trellis coding error correction and near and far echo cancellation, as well as adaptive equalisation. A parallel microprocessor bus interface permits a host CPU to monitor and diagnose the unit via its RS232C port.

Rockwell's new *R9696DP* dialup modem module offers full duplex V.32 synch/asynch operation at 9600 or 4800bits/sec, with fallback speeds of 2400, 1200 and 300bits/sec according to V.22bis, V22, V21 and Bell 212A standards. It is otherwise similar to the R1496MM.

SCIENTIFIC-ATLANTA:
The satellite products and services vendor introduced the *PC-based Model 7670 Earth Station Controller* said to be capable of earth station monitoring and control with a few simple keystrokes via user-friendly software. Apart from the primary XT, AT-type or 80386-based micro (for very large earth stations, additional local or remote operator stations are supported by the 7670.

The company also debuted a *digital audio terminal* (DAT) system that relays digitised audio (15kHz or 7.5kHz) and data (32k-bit/sec) over satellite channels over a single narrowband carrier. The unit uses a quadphase shift keying carrier modulated by a time-division multiplex digital data stream, which is demodulated and demultiplexed by the receiver.

SEL:
Standard Elektrik Lorenz, an Alcatel West German company, announced its *BIAS image archiving system* based on Group 4 fax technology (see separate story). It also showed the *Telewriter terminal*, an extension of its Digitel ISDN telephone handset which lets users transmit handwritten data to a similar remote Telewriter during a voice conversation. The user can sketch freely on the Telewriter's graphic tablet or use a grid to fill in stored forms such as order forms shown on the unit's flat panel electroluminescent (orange/yellow) screen. Anything written or drawn on the local unit is output in real time on the remote unit, from where it can be amended or changed again. The unit conforms with CCITT draft recommendations for telewriting equipment. It uses 1200bit/sec full duplex transmission based on bit-stealing during voice transmission over one ISDN B-channel. An optional printer interface can route output to an Epson-type dot matrix printer.

Rifax D50001 . . . can be connected to both analogue and ditigal lines

SIEMENS:
The West German company, one of the world's Big Three in switching and transmission equipment, presented its new *EWSP-V packet-switching system for PTTs*, claimed to connect for the first time ever all existing data networks, from circuit-switching and packet-switching services right up to the ISDN. The EWSP is also claimed to be the fastest public packet-switching system to date, with a throughput of up to 40,000 packets/sec. The system handles up to 12,000 access lines per node and can be expanded to 100,000 network termination points, according to the vendor. Seven systems have already been sold to the West German PTT, which has placed an open-ended order for the system. The EWSP switch handles telex, teletex, electronic mail to X.400 standard, facsimile and other text/data applications, offering automatic multi-addressing, prioritising, delayed transmission, store-and-forward, call diversion etc in what Siemens describes as "a further development from a purely transport network to the intelligent data network".

Siemens also presented a new compact *switching processor, the CP113*, intended for use with ISDN network exchanges to control connection setup, record and manage subscriber data and handle traffic and billing tasks. In its basic version the CP113 is claimed to handle up to 250,000 busy hour call attempts (BHCA) and can be modularly expanded to a capacity of 1.2 million BHCAs. Upgrades can be made in step with evolving technology,

(Continued page 22)

Plessey's Public Business terminal

900 vendors show their wares

(Continued from page 21)

e.g. memory can be expanded with 4M-bit chips when these become available. Software is written in the CCITT-standard telecommunications programming language, Chill, for compatibility with other vendors' switches. The CP113 has been presold to Argentina, Brazil, Colombia, China and the US. A first processor has been delivered to the West German PTT.

The $A12 million Siemens display at Geneva hinged on the EWSD exchange and Hicom PABX serving a wide range of Siemens ISDN peripherals from digital handsets and fax machines to teletex units, PCs, EFT-POS terminals and videophones. Computer-aided network management, PCM multiplexer modules, measurement equipment and a trailer-mounted satellite ground station were also featured.

STC plc:
The UK vendor introduced a wall-mounted *miniature PABX* for the international market, serving up to five extensions from one exchange line. The *MX-5* offers call intercept, hold call, remote transfer, don't disturb and remote call barring, among other features. The company also demonstrated an *integral digital multiplexer (IDMX)* said to let an ISDN operate on existing copper cables. The system, including common channel signalling, was linked to a System X ISDN switch on the Plessey stand. The IDMX contains a new proprietary two-IC chip set providing 144k-bit/sec basic rate access and includes network termination and a terminal adapter for non-ISDN terminal equipment.

Intelligent phone . . . the Plessey Diamond range

STC plc also showed a *programmable digital multiplexer (PDMX)* running intelligent network management software that can allocate bandwidth on fibre, coax or copper to voice or data traffic depending on network peak loading patterns. The PDMX, already used in the City of London flexible access system being supplied by STC, is intended for ISDN and small private networks. The vendor also exhibited a range of new optical transmission devices and the *Mascot 3000 small maritime satellite terminal* for transmitting voice, telex, fax and data traffic to and from international public networks via Inmarsat's three satellites.

TELI:
Teli Control Communications, a subsidiary of the Swedish PTT, launched its new *Garex 210* voice communication control system based on distributed microcomputer design and said to be capable of handling all telephone, radio and intercom traffic in airport, maritime, police and rescue applications from a single keyboard at each individual operator position. In the new controller, each phone line or radio is controlled by a dedicated microprocessor, limiting possible faults to a single connection. Modular design and self-diagnosis ease expansion — to an unlimited number of channels — as well as diagnostics and maintenance.

Teli AB, another Swedish PTT affiliate, showed what it claimed is the world's first Group 4 fax, plain paper copier and computer printer in the one machine. Called the *Omega*, the unit was developed jointly with Sanyo of Japan. The Omega is compatible with conventional Group 3 and Group 2 machines, has 10M-bytes of memory for up to 200 A4 pages, a flatbed scanner and uses an LED array for printing at a resolution of 16 pixels/millimetre. As a digital copier with all the usual copier functions, the unit produces 16 copies a minute, the same as when used as a high-resolution computer printer.

TIMEPLEX:
Timeplex, displayed its new generation of *Timepac* X.25 packet-switching products, including the NP100 and NP200 nodal processors and the Timepac Pad. Also shown were the E/Series of data concentrators, statistical multiplexers for up to 16 asynch channels with simultaneous multiplexing of a synchronous channel.

The company — whose shareholders are expected to approve a takeover bid by Unisys later this month which will make Timeplex a division of Unisys Networks — also demonstrated its new *Link Packetised Voice Server (LVPS)*, claimed to offer 10:1 voice compression that would slash annual voice-related PABX tie-line costs by up to 80 per cent. Available in two models as standalone units or extension modules for the vendor's Link family, the LVPS 9 combines eight voice channels on to one 64K-bit/sec data link, while the LVPS 40 compresses 40 voice channels into four 64K-bit/sec links. The units use proprietary speech encoding into variable-length packets and only allocate bandwidth to a channel when voice is present — only about 44 per cent of the time of a normal voice conversation. LVPS reportedly requires only 224K-bit/sec for every 40 voice channels, so that a substantial amount of bandwidth on a high-speed digital line can be used for other voice or data applications.

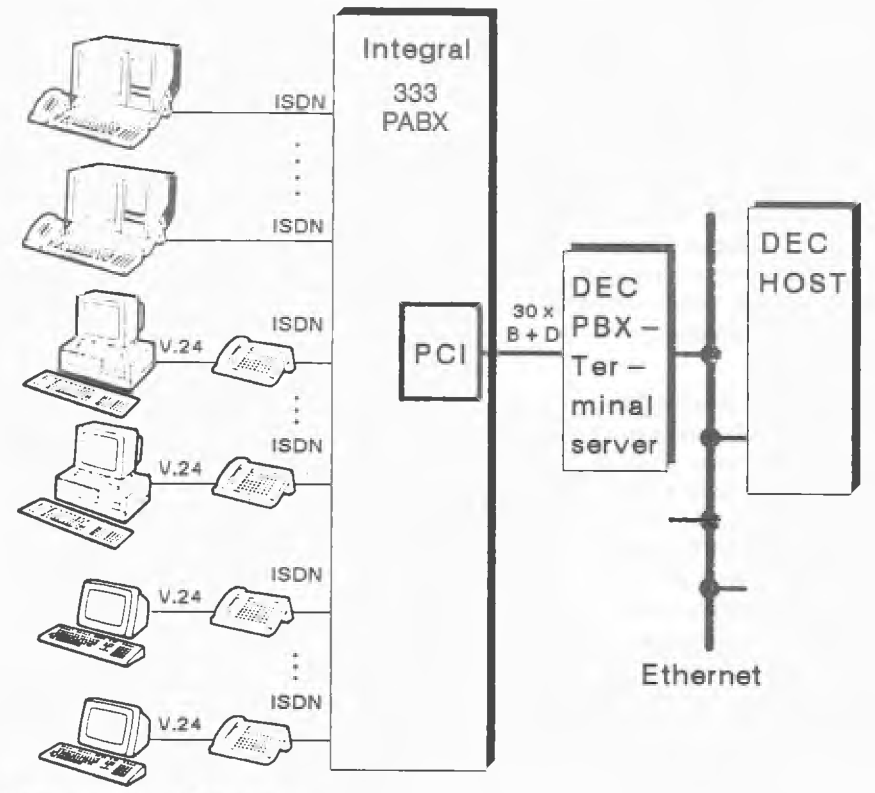


Diagram courtesy of Telenorma

Example of PCI interface for gaining access to the DEC world

The Teli Omega . . . developed with Sanyo

WANDEL & GOLTERMANN:
The West German test equipment specialist introduced the *PCM-23* VF transmission and PCM coder/decoder tester with signal generator and receiver in the one handheld unit. The unit measures VF and PCM parameters on all transmission systems using analogue interfaces, with measurements conforming to CCITT Recommendation 0.1333. Frequency settings are synthesiser controlled and the PCM-23 can store complete device settings for pushbutton recall. Results can be stored at the same time, making the unit an "electronic notebook", according to the vendor. The company also released a hand-held universal fibre optics source, the OLS-2, claiming a world first for letting the user switch between the two most common wavelengths of 850 and 1300nm. Output is stable from -10 to 50 degrees Celsius, a performance normally only available from precision laboratory equipment.

PCM-23 . . . analogue interfaces

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Lan gear leaps out at Vegas

By Jim Brown

LAS VEGAS — A bevy of local network products were among the barrage released here at Comdex/Fall'87, the annual microcomputer industry show, which officials said had a record turnout of 100,000 attendees. Among the pack was Berkeley-based Tops, recently acquired by Sun Microsystems company. Tops released Tops/Sun Workstation software that enables a Unix-based Sun-3 workstation to act as a file server for IBM Personal Computers and Apple Computer Macintoshes attached to an Appletalk network running Tops network.

The software runs in conjunction with a Kinetics Fastpath gateway, which provides the physical link between Sun-3 workstations supporting Sun's Network File System network and the Tops network. With the software, personal computers and Macintoshes are able to access files stored on Sun workstations as well as store files on a Sun workstation disk.

The software also enables Sun workstation users to access files stored on personal computers or a Macintosh. Tops/Sun Workstation costs between $US895 and $US2495, depending on the number of personal computers or Macintoshes that will access the Sun workstation.

Moses' Promiselan

Attempting to crack the business marketplace, video game maker Atari Corp announced it will resell Moses Computers' twisted-pair wire Promiselan local network adapter boards. The boards support IBM's Network Basic I/O System as well as IBM's PC Lan operating system.

With Promiselan, an IBM Personal Computer AT or compatible — including Atari's PC4, which was also released here — acts as the hub of a star-configured net supporting up to 17 IBM PCs, each of which can be up to 300m away. Each PromiseLan hub board can support up to four RJ-11 ports. Hub boards communicate with slave adapter boards installed in each personal computer at up to 1M bit/sec.

A starter kit linking two personal computers is $US375, and each slave adapter board is $US150.

Atari said it would also develop Promiselan adapter boards for its Mega and ST microcomputers.

Waterloo Microsystems released Version 2.41 of its Port local network operating system. The Port operating system runs on IBM PC ATs and PS/2s outfitted with a Port Network Interface Card or an IBM Token-Ring Adapter.

Port Version 2.41 includes support for the new Gatekeeper software, which enables a Port system administrator to implement security measures on Waterloo's set of software gateway products.

Gatekeeper software runs in conjunction with Waterloo's series of software-based internetworking products that link a Port-attached device to another Port device on a remote network. Those internetwork products include Port Remote Workstation, Port Backbone Internet Gateway, Port Asynchronous Internet Gateway, Port X.25 Server and Port X.25 Point-to-Point Server. Those existing products range from $295 to $2995. Available in December, Port 2.41 will cost $2495.

DSC Nestar Systems announced its Planstar file server will now support an Ethernet connection. The firm's Planstar file servers already support connections to token-ring and Arcnet-type nets.

IBM divides to conquer

LAS VEGAS — IBM has announced an internally developed network server that incorporates significant portions of Microsoft Corp's OS/2 Lan Manager: the redirector, server code and undefined software. The announcement at Comdex/Fall '87 ended four months of intense speculation.

"IBM is not supporting the Lan Manager," said Michael O'Dell, an IBM product manager for Lan System Products.

There are several differences between the two products. For example, the Lan Manager supports OS/2 Standard Edition, to appear next month, whereas the Lan Server requires IBM's OS/2 Extended Edition Version 1.1. The Lan Manager is scheduled for the first half of 1988, and both IBM products are slated for delivery in November 1988.

Also at issue are some Lan Manager Application Programming Interfaces (API) that reportedly will not be supported by IBM before 1989 and possibly not at all.

The impact on users will depend on which way network software and applications developers go. Since IBM's response to the Lan Manager was similar to its response to Microsoft's MS-Net, users have some clues.

At the time of MS-Net's debut, IBM opted to license just the MS-Net redirector, to which it added other software to create the IBM PC Lan Program. Network software vendor Novell chose not to license MS-Net, while rival 3Com Corp did.

But because IBM, 3Com and Novell all were supporting IBM's Netbios protocols, software written to Netbios would run on all three networks. At issue now is whether applications written to the Lan Manager will also run on the OS/2 Lan Server and Novell's proprietary OS/2 server.

Users could see a split standard, with some applications written to OS/2 and the Lan Manager redirector, and others written to the Lan Manager APIs.

"We are not testing compatibility between the two products," said IBM's O'Dell. "We do not plan to introduce any APIs to Version 1.0 of the OS/2 Lan Server in 1988."

O'Dell did reveal some planned enhancements to the Lan Server, including full SAA communications support, network management (as in Netview) and support for IBM's Enhanced Communications Facility, he said, adding there are other ways to provide Lan Manager's APIs.

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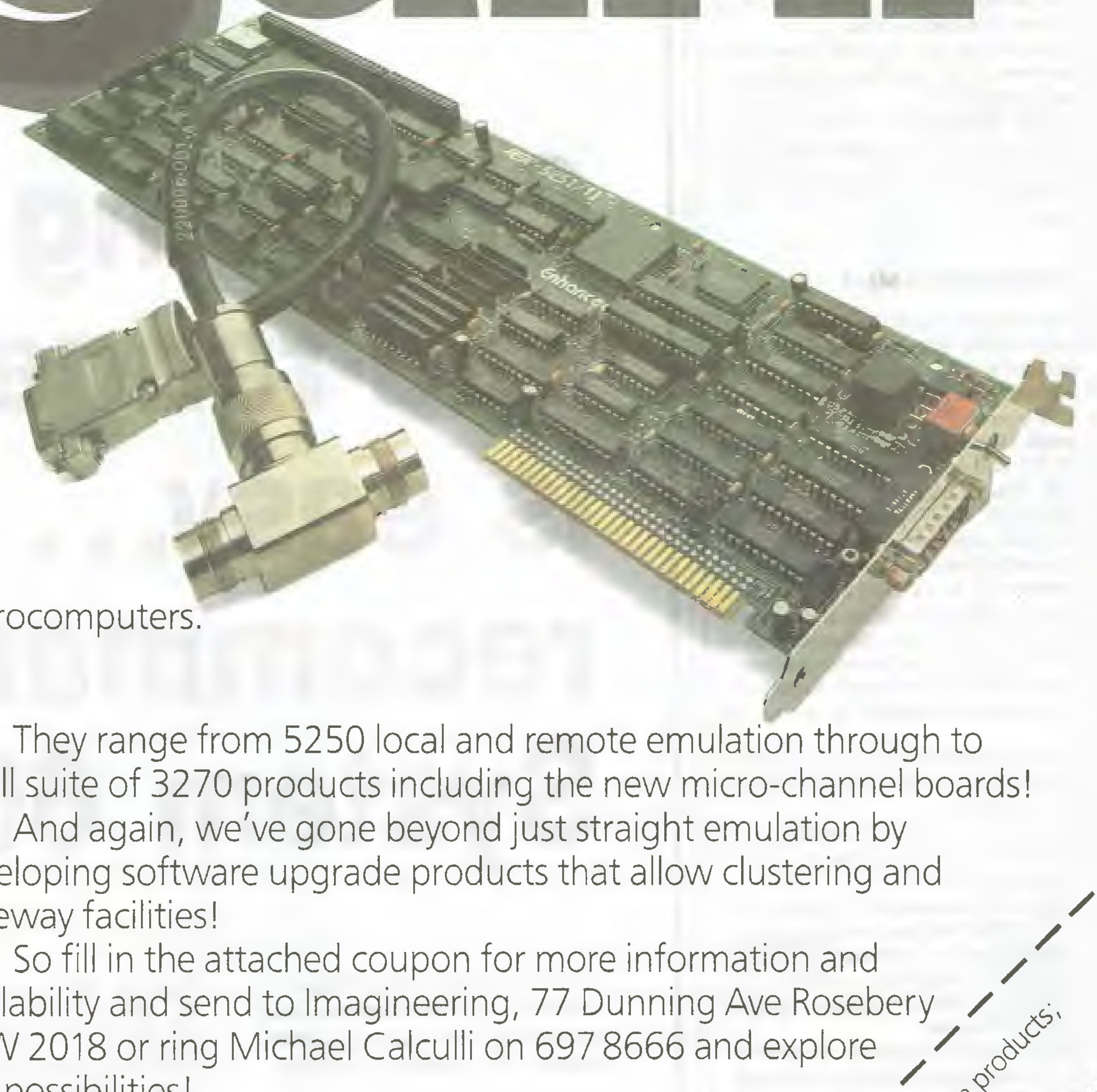

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